THE AUTOMOBILE

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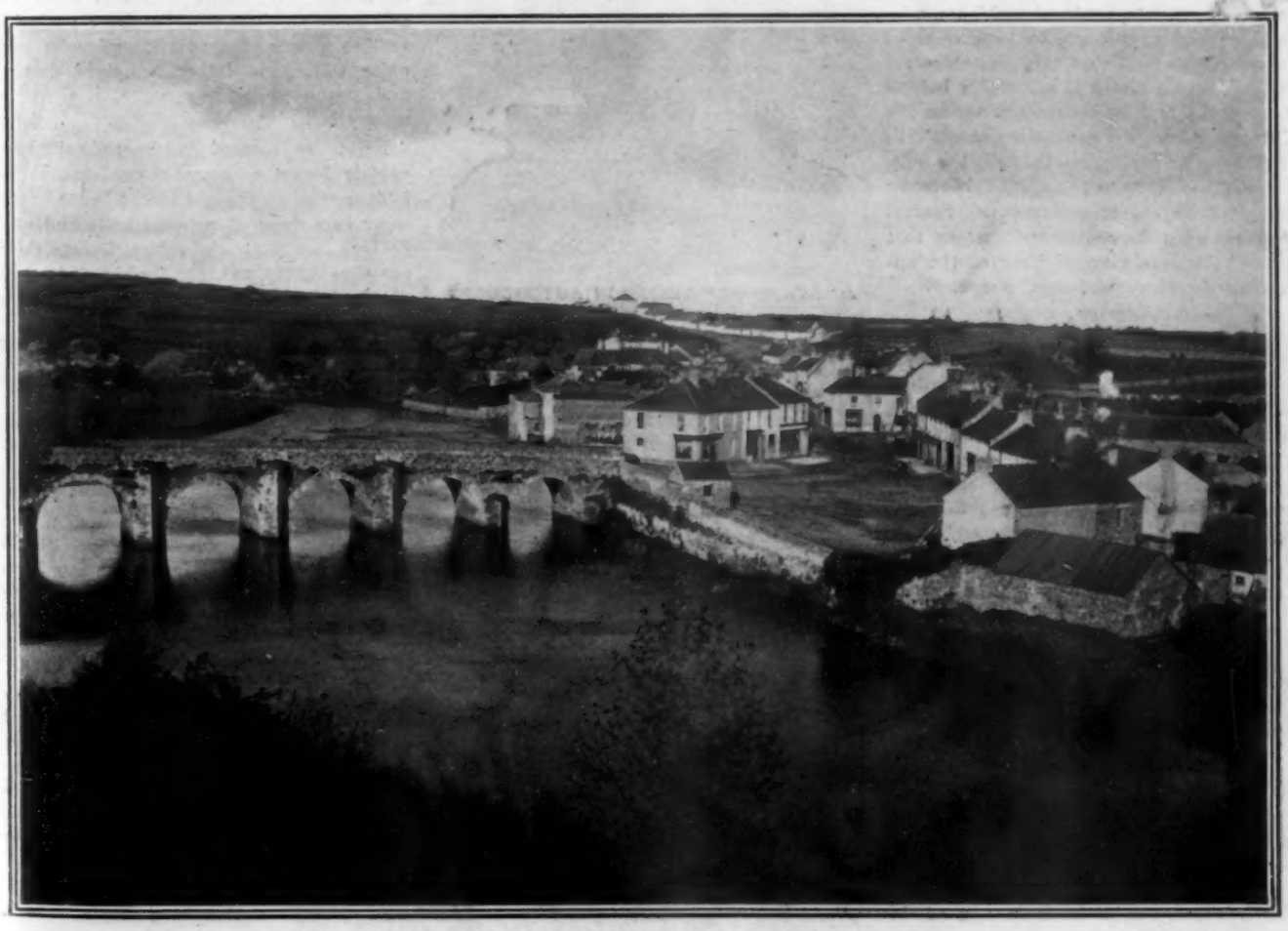
Preparations for the Gordon Bennett Race.

Expansion of the Race Meet into a Fortnight of Racing and Tours and Other Diversions — American Competitors' Quarters in Dublin Alloted — Dunlop Co. Makes Tire Concession — Arrangements for Policing the Course.

PREPARATIONS for the Gordon Bennett race are being pushed forward vigorously by the various committees of the British Automobile Club. The race committee has prepared a tentative programme for an "Irish Automobile Fortnight," which will commence July 1 and end July 15. On this programme the date for the Gordon Bennett race is fixed for July 2. On the opening day of the fortnight it is planned to hold an exhibition of the competing cars in a large skating rink in Dublin, and on this day also the cars will be weighed in. On succeeding days a long programme



BRIDGE OVER THE LIFFEY AT KILCULLEN ACROSS WHICH THE GORDON BENNETT CUP CONTESTANTS WILL RACE.

of speed and hill-climbing contests and tours is proposed, with intervals of rest on Sundays. At the conclusion of the official programme it is probable that groups of visitors will tour through some of the western and northern sections of the island, famous for their wildness and the grandeur of the coast scenery.

The preparations include an elaborate system of policing and control of the course during the great international race, and the social side of the event is engaging the attention of the Irish Automobile Club. Refusal of accommodations for the automobile clubs of America, France and Germany has been secured at the Shelbourne, the leading hotel in Dublin. By this arrangement the various competitors, the members of the International Commission and the British race officials, will all be housed under one roof.

A concession has been made by the Dunlop Co., which has withdrawn all patent restrictions in relation to tires that may be used on the cars run in the race, the British Club guaranteeing that any tires that may be an infringement of the company's patents shall be taken out of the country after the race.

The safety of spectators is receiving a good deal of attention. It is proposed to divide the course into quarter mile sections and place these in control of responsible officials, or local residents, who will see that the course is kept clear of stray animals and that the spectators remain at a safe distance, preferably behind the fences. As the course lies across the Curragh, where the great permanent military camp in Ireland is located, the suggestion has been made that soldiers be employed to aid in policing the course. And following the continental custom, that military buglers give warning of the approach of each car during the race.

(*Continued on page 403.*)

A promising and as yet undeveloped field for automobiles is British India, according to Carl H. Page, who is making a circuit of the world in the interest of the Oldsmobiles. Writing from Calcutta, under date of February 20, Mr. Page says that while the natives fear the automobile as an ungodly thing, the white residents are taking to it with enthusiasm. There are only about 25 automobiles in the entire country at present, but the demand is increasing. Difficulty in securing gasoline is the chief trouble of the Indian motorist, the fluid being quoted on January 15, before the arrival of a Standard Oil Co. steamer, at $9 a gallon.

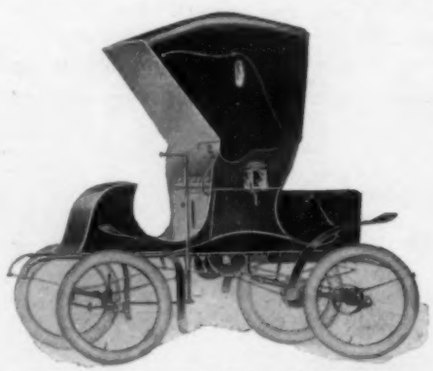
It is stated by *La France Automobile* that the Mors cars entered in the Paris-Madrid and Gordon Bennett races will probably be equipped with Jenatzy's system of magnetic clutches, taking the place of the change-speed gearing and mechanical cone clutch arrangement heretofore used in Mors cars.

Influence of Carriage Styles on the Construction of Automobiles.

Horse-Drawn Vehicle Design a Queer Mixture of History, Tradition and Accumulated Experience Modified by Whims of Fashion—Field for Development Along Motor Vehicle Lines.

BY MARIUS C. KRARUP.

"Correct style" is a term that means a great deal in the carriage trade and to carriage buyers and owners. It is a mysterious quality residing partly in the name and partly in the substance and the design of the vehicle. History, tradition and the accumulated experience in construction furnish the conservative elements which must not be violated too much if correct style shall be the result, but on the other hand the whims of fashion must not be neglected, and they demand frequent changes from year to year in lines, colors, weights, materials and effects. Progressive shop methods must be adopted, steel must take the place of wood, and rubber



A "STANHOPE" DESIGN IN AUTOMOBILES.

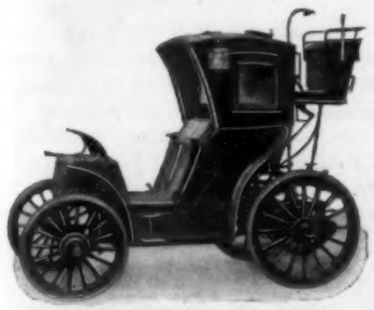
the place of iron in certain places so as to render homage to modern ideas in a seemly fashion but not with undue haste. The desires of good customers for "individual" design must also be considered, for one's carriage no more than Madame's hat should be an exact counterpart of what anybody else may buy. But while great care is taken that Madame's hat shall not be copied, it is different with carriages. They are meant to be copied, and the "individuality" consists in having the first of a kind; to set the style. The Brougham and the Stanhope are examples. These styles may now be written with a small b and a small s, brougham and stanhope. Though individual styles in the beginning, they have become classes. In this distinction the carriage industry sets great store, though it is not quite fully known how long time is required for elevating a "style" to a "class." Formerly a generation or two, but now five years would probably suffice.

Of all things to be avoided, in regard to carriage styles, classes and fashions, exactness and complete unanimity of opinion come first. Nothing should be fully known. That would immediately remove the subject from art treatment.

Possibly the automobile industry stands in need of this art. At all events, carriage builders look with horror and disgust upon the butchering of the sacred nomenclature of the carriage trade now witnessed in automobile circles. "Everything that is not a runabout is a tonneau or a touring car;" they say. "Why, how can you expect to keep up dignity (and prices) with such haphazard and grossly inappropriate terms?" It is admitted, however, that the corruption commenced in the carriage industry, many of whose members think but little of the religious cult of vehicular elegance and find it easier and more to their taste to draw trade by scaling prices downward, and who are quite willing to father a hybrid design and sell it under any name, if there is money in it.

Now, confronted with radical new vehicle forms among automobiles, there is danger of all the old fences being swept away in a flood of new methods and new designs, and their defenders, feeling their prestige threatened, are looking with undisguised hostility to the new movement, unwilling to join forces with it, partly because the profits at the top notch of the carriage industry are very much greater than they can possibly become in the irreverent automobile industry until standard forms of manufacture have been developed and sanctioned by a fastidious public, and partly from sentiment. Knowing that in automobile work they would be judged largely by results on an equal basis with competitors and unwilling to step down in the common arena and quote prices for automobiles which might react to depress the prices which they are now in a position to command in the older field, they hold aloof, and make at most the concession that they will design special automobile bodies to order. But from their own ranks a few of the more matter-of-fact ones, who aim more after large production than after untenable prices, arise to proclaim automobilism the gospel of the future and by embracing it force the development irresistibly in the new direction. The electric automobile which lends itself to carriage forms, especially

since the advent of the underslung battery, presents the opportunity for turning carriage-building art to account. On the other side the automobile builders who



AUTOMOBILE HANSOM.

came into the industry by the machine shop entrance have found themselves compelled to learn a great deal about carriage work and from sheer necessity—as necessity looked to them, at least—have built up establishments which by the quality and quantity of their output, even judged from a carriage maker's viewpoint, warn the older industry that it must either step into the breach while it is time or be prepared to step aside and out before long.

The unavoidable combination of the two industries is not tempting to the carriage maker, nor wholly to the taste of the automobile builder, but it is written in the stars.

The carriage maker knows only too well that a combination of heat and moisture is exceedingly trying to such structures as he has turned out in the past, and if he has a reputation to defend, he is not anxious to have it tested out in a steam or gasoline car, in which heat and moisture have so far been rather too close to the woodwork. Also the oil makes his heart quake. He dislikes intensely to have a vehicle pointed out as his production, perhaps of the current year, which, as likely as not may have grease spots on the upholstery and may be otherwise defiled through too great proximity to gears and engine and the careless habits of the chauffeur. The electric vehicle is the only one that appeals to him at all. Automobiles

ELECTRIC WAGONETTE.

with the engine in the carriage body are an abomination to him, and the motor-in-front type, with the body portion resting on the metal chassis, gives too little opportunity for the kind of work in which his special ability mostly lies.

In spite of all this he will be forced to make automobile bodies or to lose his best artists and workmen to those who will. In practice he generally chooses to become financially interested in an automobile firm or to sell out to one. In either case there is a merging of carriage traditions and new automobile requirements, which will result in more attention being paid to distinctive styles in automobiles and appropriate names for each of them. And nothing is admittedly more difficult than to devise brand new names for new commodities, those developed in the carriage industry will be preserved in so far as possible.

This leads to a consideration of what the names used to denote various carriage styles really imply to-day, and to what extent they are applicable to constructions in which room must be made for the power and in which a great many other

ELECTRIC CHELSEA.

factors interfere with the freedom of the designer, while also offering him new opportunities if he learns to reconcile the new with the old.

A characteristic example of what the conscientious carriage designer feels impelled to do before he has become sufficiently emancipated from his allegiance to carriage ideals is shown in the accompanying engraving of an electric stanhope made by a well-known carriage manufacturer. The front line of the seat panel and the calash top are about all that carries out the idea of a stanhope in the natural outlines of this vehicle, but so as to carry the name more strongly, a portion of the woodwork is in a lighter color and drawn in lines which suggest distinctly the original stanhope model. The dictionary says that a stanhope is "a light, open, one-seated vehicle, formerly made with two wheels, but now commonly with four. (After a Mr. Stanhope for whom the first one was built.)" The carriage trade, always eager for dignity, prefers to derive the name from Earl Stanhope, and not from a plain Mister, but the historical fact seems to be that Philip Henry, Earl of Stanhope, gave his name to the orchid so known, but not to a carriage. Were it not that well-sounding names are precious and should not lightly be dismissed, stanhopes would probably not exist any more, for it is agreed among experts that the only distinctive feature there remains by which to recognize this class of vehicle is the front curve which is marked S in the

AUTOMOBILE SURREY.

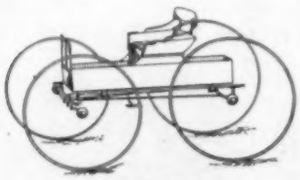
accompanying drawings of a stanhope, a "stanhope phaeton" and a "stanhope buggy," and this distinctive curve is used in other vehicles also, as for example, in the covert.

The several hundred learned men who collaborated in the production of the Standard dictionary have apparently not been able to discover a uniformly accepted basis for definitions of the various styles or classes of carriages, for the dictionary gives only loose descriptions. A runabout is described as "a light, handy, open wagon," and this suits the custom so far adopted by the automobile industry perfectly, but carriage people draw the line much more sharply. Historically the name belongs to the Stuyvers carriage firm of New York, for whom the first runabout was designed by a man named Hilton, and by whom the name was copyrighted as applying to a short-coupled piano-box wagon with large wheels and hung low on sidesprings. The essential feature of it was that the box overhung the front and rear crosswise springs (over bowed-down axles) by about 2½ inches, adding about 11 inches to the length of the box as compared with previous styles of piano-box wagons. While the carriage industry in general has taken up the name without credit to the originator, there is no inclination to extend it to "light, handy open wagons" in general. Automobile builders

ELECTRIC PRIVATE OMNIBUS.

who desire a suitable nomenclature have long been looking around for another name for their lightest form of open ve-

hicle, and a good find seems to have been made in the term "Chelsea," applied to a type which is now common in all three classes of automobiles. Neither the dic-

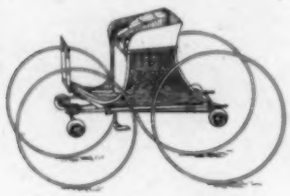


RUNABOUT.

tionaries or the carriage industry in this country are familiar with the origin and strict meaning of this new term, and it is hoped that it will not be traced to its source—probably British—since it is so much better not to be restricted by technicalities in designating automobiles whose forms are subject to so many changes from year to year. Kept on the waiting list and used with discretion, the word "Chelsea" may prove as convenient as the word "tonneau," which would not be half as acceptable when made intelligible and suggestive by translation. A "tub-car" might not bring within $200 of the price easily obtained for a "tonneau." Similarly a "Chelsea" should fetch at least $100 more than a "runabout" of the same design. If the higher value were not there to begin with, manufacturers would soon see to it that it was put there, as the laws of trade have a way of bringing about the fitting order of things.

"Phaeton" is one of the most useful names, precisely because it has lost nearly all its distinctive meaning and yet leaves a flavor on the mind of something light and graceful. It has great scope and sounds well, and though its import is not subject to close definition, it is not easily misapplied. An omnibus, a brougham or a break would not be called a phaeton by anybody; a cabriolet and especially a victoria might be so misnamed. Among automobiles there is in fact a certain electric "victoria" which ought to be a "phaeton," and if no example can be pointed out of a phaeton which ought to be a victoria, it is probably for the reason that a victoria usually brings a higher price.

In all new styles which hover between

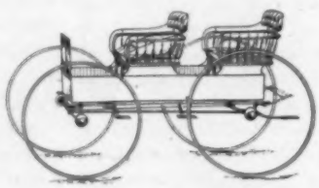


COVERT WAGON.

two recognized classes, the carriage-maker is always sorely tempted to stretch his technical and artistic conscience a little, so as to bring the new creation in the class which commands most prestige at the time and the highest price, and to this peculiarity may be laid many apparent peccadilloes in nomenclature. As for the "phaeton," it seems, by looking over a number of vehicles so styled, that the design nearly always suggests a recumbent S, and the trade says that it is characterized by curved, swinging lines forming the contours of narrow panel areas. The dictionary says: "A light four-wheeled carriage containing either one or two seats, facing forward, open at the sides, and with or without top. The name is variously and loosely applied, as to a high two-seated vehicle drawn by two

PHAETON.

horses, called mail or park phaeton, and a low carriage generally drawn by one horse (pony phaeton), etc., but the distinguishing characteristic is that the body frame is usually higher under the seat than eleswhere." This is the nearest the dictionary comes to a definition of any carriage type. Originally the frame of a phaeton could not extend farther back than the seat, and any considerable extension is still frowned upon. The numerous "steam phaetons" do not, therefore, come easily within this class, especially as their lines are too straight. The majority of them might easily be made fairly correct

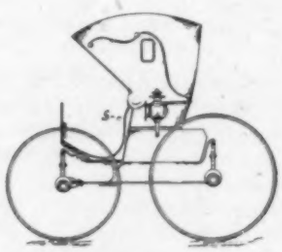


TWO SEATED RUNABOUT.

"stanhopes," however, save for being somewhat too low and small-wheeled.

The "surrey" is a godsend to the automobile builder, for though it should be mounted on side bars and of the type illustrated herewith without a box extending rearward from the rear seat, no great insistence is placed on these points, probably because the term is a native one for which no allegiance is due to France or England, though Englishmen now show signs of being willing to re-adopt it. It is also supposed to have a straight sill, but this requirement, once de rigueur, is compromised in modern carriages in favor of cut-under wheels. As automobiles may have the straight sill without inconvenience—not depending on the fifth wheel for turning—they are the natural heir takers of the term. This style may have a top, and should have "stick seats."

A tendency to resurrect the word "coupé" has been observed in the automobile industry, and as it is no longer used by carriage makers, there can perhaps be no objection to giving it the broad meaning, authorized by the lexicographer who says it is "a low, four-wheeled close carriage, with a seat for two and an outside for the driver." In conformity with this broad use of the word it is frequently applied colloquially to any closed vehicle in public service smaller than a brougham or coach, and especially to "straight-front broughams." Those familiar with the old-time diligences of France, however, will recognize the true outlines of the coupé in the rear portion of these large public carriages, which was in fact known under the same name, being in a measure cut off (*coupé*) from the main portion of the diligence. Some carriage builder conceived the idea of cutting it off entirely and made a separate style of carriage of it. It was characteristic of it that it had



STANHOPE BUGGY.

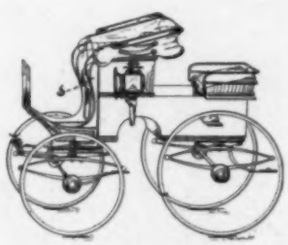
a crescent-shaped seat for one (or two at a pinch) facing the full-size seat for two, differing from an extension-front brougham only in the shape of this seat and by the extension not coming below the seat and being rounded instead of angular. For an automobile the design of the coupé might be closely approached by using the space of the front seat for steering and operating apparatus while having the motor hood take the place of the driver's perch, or still more closely, of course, by having a driver's seat in front. It is considered essential that the front line of a coupé should be like the stroke of a J, the same as in most broughams; and a rounded rear contour, from the seat down, is preferred especially when the vehicle body is made shorter than that of a brougham, as it usually was.

Some twenty years ago an abbreviated form of coupé, somewhat similar to a landaulet, was placed in the market and gained immediate favor, but the half-world was first to discover its virtues and took enthusiastic possession of it, whereupon

the rest of the world promptly dropped it. It was called the "coupelet," and is no more made, but this style with a low instead of a high driver's seat, might be well adapted for an automobile.

The same may be said of the landaulet, which is also very rarely made nowadays. Made with a plate-glass front in a wood or metal frame, the landaulet might indeed make a very smart gasoline motor-in-front automobile, to be used open or closed, as desired. In order to have it sufficiently low, the bevel gear driving shaft would have to be taken through the carriage body, perhaps, but even if the flooring were to be raised in a central ridge for this purpose, the comfort of the occupants would probably not be seriously diminished, as the raised portion could be very narrow, the entire change-speed gearing being arranged beneath the driver's seat.

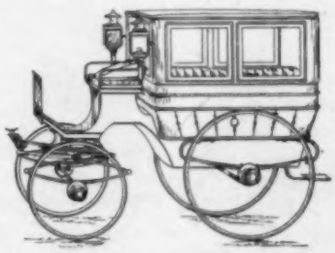
This is only one of several suggestions for automobile builders that may be received through examining discarded or half-discarded carriage styles, abandoned as they were as often for economical as for artistic reasons. In the case of the private omnibus, which is largely taking the place of the landau, the change in the



STANHOPE PHAETON (T-CART).

vogue is partly due to the common use of landaus by liverymen, who have in it a closed and an open carriage in one, but equally as much to the greater capacity and shorter wheel base of the omnibus, whose short coupling makes it easier to handle in cramped quarters and for short turns. The same quality will endear the omnibus to the automobile maker who is compelled to seek all available means for keeping the wheel base within bounds in all the larger sizes of vehicles, as witnessed by his predilection for the tonneau style, in which the desired effect is obtained, as in the omnibus, by supporting the load partly behind the rear axle, and not the whole load between the axles, as in the phaeton, the stanhope, the cabriolet and victoria, the brougham, the landau, the rockaway, the surrey and even the runabout.

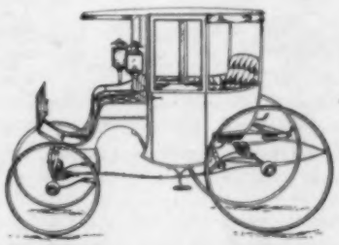
Except for electric vehicles, which may be operated as safely from the roof of a double-decker as from a lower position, the omnibus style does not promise as much for automobilism as its cousin the wagonette. The distinguishing mark of the latter is that the top of the roof, or the canopy, extends over the driver's seat, which is only a few inches above the level of the other seats. It may be open or closed or canopied, while the omnibus is always closed and has the driver seated so high up that his head extends above the roof. The dictionary gives a narrower definition of wagonette, being for once less liberal than the carriage industry. It says: "A carriage or pleasure wagon built to hold six or eight persons, usually topless, having two lengthwise back seats facing inward and one or two seats crosswise in front," and this corresponds, as will be noticed, closely with the accompanying illustration of one of our



LIGHT, OMNIBUS.

electric wagonettes, built by a company which adhers rather closely to the traditions of the carriage trade, and whose electric theater bus, surrey and hansom are also shown.

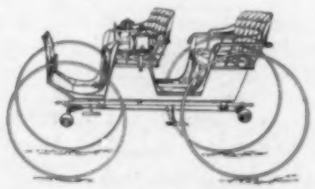
The "carette" as known in Washington and Chicago is not recognized in the art, but its name suggests itself as a possible variant for omnibus or wagonette, neither of them very felicitous as a name for vehicles used by individuals. "Carette," to be sure, originally meant something quite different from an omnibus, but this has now been forgotten. The "calash" is another term, and "caroche" a third one,



CURTAIN QUARTER ROCKAWAY.

which may be kept in reserve for certain types of automobiles which are sure to put in their appearance sooner or later, when the semi-closed vehicle—of which the hansom is an example—becomes fashionable The words are at present free for the taking in this country, although it is understood that two-wheeled calashes are still used in Canada to some extent, and the commoner four-wheeled style in Germany and rarely, in England. No doubt a gasoline hansom may even now be successfully constructed, operated if necessary by Bowden wire connections or similar expedients, from the driver's perch.

One of the most popular American styles for a family carriage is the "rock-

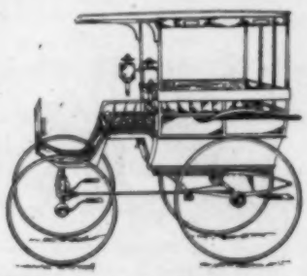


SIDE BAR SURREY.

away." When it was first offered to the public by a dealer in New York, so legend says, he was asked repeatedly where it was made, but as he did not wish to put competitors on the track of what he thought was a "good thing," he answered them all: "Oh, down at Rockaway," where there is no carriage factory. And the name stuck to it ever after. It is distinguished from the brougham and the coach by having glass or curtained quarters, and a low driver's seat shielded from sun and rain by a forward extension of the roof. It is supposed to be driven by its owner, while carriages with the driver's seats much higher than the other seats, are always to be driven by the coachman. By squaring the shape under the rear seat, the rockaway becomes a "station wagon."

For all automobile purposes the wagonette type with which the rockaway has much in common, would probably be preferred. Midway between them stands the canopied tonneau car, with draw curtains and the species of this design known as the "limousine" in France, both of which combine the forward facing of all seats in the rockaway with the better load distribution and shorter base of the wagonette.

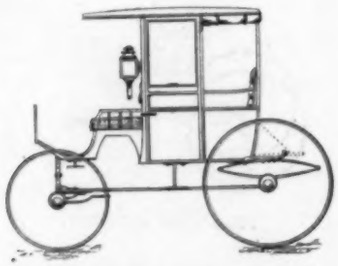
Decidedly more classical from the conservative carriage designer's standpoint are the victoria and the cabriolet, two styles which now stand so near together than an ill-advised attempt has been made to re-baptize the cabriolet and have it known as the "panel-boot victoria," basing the new name with its awkward suggestion of shop terms upon the fact that



OPEN PRIVATE WAGONETTE.

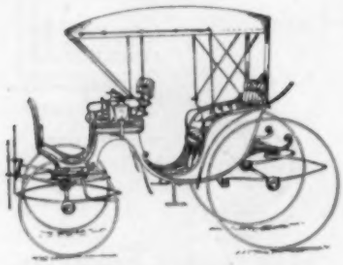
the only tangible difference between them lies in the wood panel extending to the boot in the cabriolet, while the driver's

seat in the victoria is supported on iron scrolls. That the two terms have been allowed to grow so nearly synonymous is in



GLASS DOOR STATION WAGON.

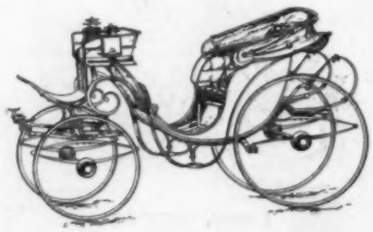
itself evidence of the ebbing vitality of carriage lore, for the cabriolet was once distinctly a one-horse carriage, very dapper in effect and quite angular in it lines, with the driver's seat not nearly as high as it should be in a victoria; and many cabriolets are still made on this model. The authority on language describes the French style as "a one-horse coverd carriage with two seats, and originally with but two wheels and a calash top; a cab." Any person whose memory runs back some thirty or forty years in European affairs will recall the two-wheeled cabriolet as a particularly jaunty style, which certainly could not be reproduced in automobiles except perhaps in connection with a forecarriage or tractor, but probably there is no other carriage style so intimately and inseparably associated with the horse as this one, and it had perhaps better be left alone by the automobile builder. The word is still pronounced in French fashion with the t silent, while the landaulet indicates its different nativity by having the t pronounced. The French people, by the way, repudiate the word Victoria and call the style of that name the "milord." It looks best with C-springs, but lends itself with some grace to electric battery traction, though hardly to any other form of mechanical propulsion. "A low, light, four-wheeled, cut-under form of carriage, with a falling top, a seat for two persons over the rear axle, and a raised driver's seat," is the way the dictionary has it, putting an emphasis on the position of the seat "over the rear



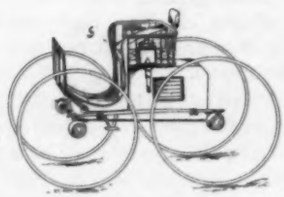
EXTENSION TOP CABRIOLET.

axle," which is now honored in the breach more than in the observance.

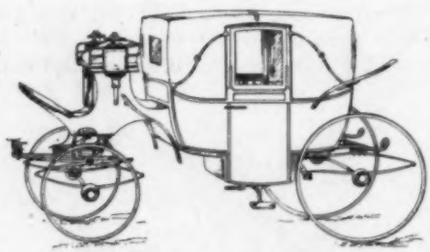
Knowing that the landau is at present the only officially accepted carriage type of this country, namely, in so far as established custom demands that the President shall have at least one landau for state occasions, ambitious automobile manufacturers might attempt to construct a mechanical vehicle equally well adapted for this purpose, so as to pave the way for a telling recognition of the automobile movement by the government of this manufacturing nation. A landau was formerly always "a two-seated carriage having a double top, the fore part of which can be removed and the hind part folded back; so called from the German town where it was first made," but for private use the full leather top which folds both ways is now



VICTORIA.



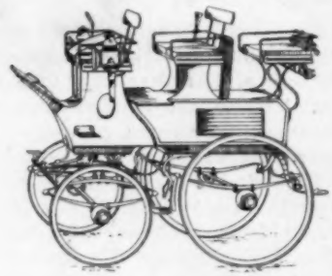
STANHOPE.



LEATHER TOP LANDAU.

generally preferred, and if a rigid front is used it is made to slide down and need not be taken apart and stowed away under the boot. Until the practical front-drive and front-steer construction shall have been devised, the two-seated landau does not seem to offer much hope for motorists, for the reasons before stated; mainly the long wheel base.

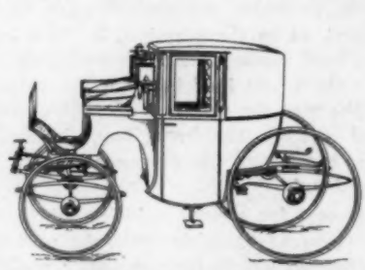
If it is assumed that every accepted type of horse-drawn carriage should eventually have a counterpart among motor cars, the "break" should also engage the motorist's attention, although the height of its load jibes poorly with the application of power at the rim of the wheels on the ground. Electric "breaks" are made and used, to be sure, but are, as would be supposed, rather sensitive to sudden lunges at stops, starts and speed changes. The spring suspen-



BREAK.

sion shown in the accompanying outline of the type is better adapted for horse traction than for propulsion from the wheels. If rigid reaches between the axles are ever necessary in a pleasure automobile, they seem to be markedly indicated for the 'break" for mechanical reasons, but they would doubtless mar its style. As a carriage type it has a pronounced individuality, readily discerned, but one which owes much more to the taste and resourcefulness of designers than to tradition. Almost any one feature in it may be changed, so its general character as a high, smart vehicle is preserved, says the trade, again intimating what seems to be the upshot of all the observations in the foregoing, namely, that the carriage builder of to-day owes much less to the past than he himself generally believes, and that it is the individual ability and good judgment in matters pertaining to vehicle contours and the symmetry between carriage design and carriage purpose, naturally developed in him through lifelong occupation with these things, which will render his assistance of value in automobile manufacture, much more than any traditional adherence to set forms of shop practice or close knowledge of what has been done before in vehicle construction in this or any other country.

If the automobile industry were old enough it could get along without him, and, even as things are, it cannot accept him in a dictatorial capacity, but only as an adviser who can teach something of value, but who, on the other hand, has more to



STRAIGHT FRONT BROUGHAM.

learn from automobilism than he can teach it.

An Expert's View of the Motor Cycle.

Advantages and Disadvantages of the "Younger Brother" of Automobile Are Discussed in Popular Style with a Verdict in Favor of the Motor Cycle.

Some interesting points about the use of the motor cycle, written in an interesting way, are given publicity in a paper read before the Automobile Club in London recently, by M. O'Gorman. He is an Irish engineer who adds to his technical knowledge an expert acquaintance with the motor car and the motor cycle also, having owned and driven six different makes of the power-driven bicycle, and therefore speaks as one with authority.

The author's racial sense of humor shows at the beginning.

"The first motor bicycle I ever saw was a Werner of the topheavy type," he says. "The rider stopped to ask me the way in very broken English. He was a polite and pleasant fellow. I asked him if the engine throb did not tire his hands. 'Non, m'sieur.' Did the gyroscopic action interfere with his steering? 'Non, m'sieur.' Had he ever fallen? 'Non, m'sieur.' Had the machine ever given trouble? 'Non, m'sieur.' I thought there was one question so important that I would ask it in French. Did monsieur understand English? 'Non, m'sieur.' But I have since found that, even when they do speak English the answers are usually the same—unless they be the direct oppisite.

"My experience is this: As delivered by the maker the machine *runs*, but not forever. You must first pass through the overhauling stage or trouble era. This "trouble stage" either makes or mars the machine; in fact if you remedy every fault in such a way that it cannot recur, it *doesn't* recur, and after 500 miles you have almost doubled the original value of the machine, and thereafter it will never seriously delay you. Having got the motor bicycle in order, here are its advantages:

ADVANTAGES DISCUSSED.

"(*i.*) Above all, exquisite simplicity. The simplest possible steering, the simplest gear or drive, the simplest frame (no spring no reach, no twisting strains, and the smallest possible number of wheels, and those always "in track"), the simplest form of single-cylinder engine, the simplest form of engine-starting device, the simplest cooling, the simplest governor (viz., none), the simplest repairs owing to the accessibility of everything and the portability of spares by post or on board, the simplest tires to repair owing to their light section and comparatively small air pressure.

"(*ii.*) Next in importance is safety. You are safe from running backwards down hill, you can safely dodge round a cart which blocks a dangerous corner better than any motor car (I have even jumped the curb on an emergency with ease), you are safe from the police at far higher speeds than a car; you are safe from being stranded on the high road, as you can pedal; you are safe to find enough petrol, benzine or alcohol to take you through; your appearance doesn't frighten horses and policemen, you are nearly safe from fire in an "all-metal" machine; you are safe because your brake power (if you attend to it) is enormous compared to your inertia; and, lastly, you are safer than a car from skidding, with equal precautions.

"(*iii.*) Thirdly, there is the question of hill-climbing and speed. Barring breakdowns, the best motor bicycle may make a better average speed than a car up to five times its price. This is partly due to the immunity from horse and police interruptions, partly to extra safety allowing of more daring, partly to small windage and small weight, and partly to the available extra power derived from the pedals. It is largely due to the easy choice of the best track on the road, whether for surface or for the avoidance of other traffic. It is also ascribable to the ease of tire repair. In London, after a year's experience, nothing can beat it—train, car, tram, cab or bicycle. This is because it can ignore the traffic blockages. You worm your way to the front of the stoppage, and even if a constable will not allow you to walk across the gap (as he often will), the fact of being first gives you an open street free from carriages beyond the cross roads, where the speed of the machine can assert itself.

"(*iv.*) It is unrivalled in cheapness in every department. It is cheapest to buy. It is cheapest in petrol and oil (Mr. A. Campbell-Swinton and I ran to Oxford on 9 cents each). It is cheapest to house, for it requires no stable, and costs little to clean; it requires no *chauffeur*. It is cheapest to take by train, and there is no demurrage at the station, as it travels with the passenger. It is cheapest to repair. It is cheapest in tire upkeep. It is cheapest to insure and cheapest to improve and experiment on. It is, in fact, the cheapest method of traveling yet invented, excelling in this respect (on say 100-mile run) walking, bicycling, riding, and third-class trains. Is it not the *motor for the man of minute means?*

"(*v.*) Minor matters: For a given speed it raises less dust than any other "car." On arrival at its destination it can be carried out of the roadway to stand in the garden or near a shop door. No repair ever compels its driver to take up such a position under his mount that he gets hot water in one eye, lubricant in the other, petrol in his mouth, mud in his ears or hair, with every chance that a spanner will fall on his face owing to a friend unwittingly pushing the road wheels over his leg while stumbling over his middle part."

Having discussed the advantages of the motor cycle the author points out reasons why the "younger brother" of the motor car deserves the encouragement of all motorists, individually and in organized clubs.

"(*i.*) It increases the places where petrol and oil are stored.

"(*ii.*) It increases the number of people who understand the explosion engine.

"(*iii.*) It increases the number of fast travelers on the road, and gives the weight of numbers to the whole automobile movement, and removes from the sport the absurd criticism of "rich men's juggernauts."

"(*iv.*) It increases the chance of road improvement, and affords an opportunity for the study of tires and new devices which may be cheaply tried on the small scale first.

"(*v.*) It is a direct feeder to the membership of the Automobile Club, the Road Improvement Association.

DISADVANTAGES SET OUT.

"These generalizations I will conclude by epitomizing the drawbacks of the motor bicycle, to avoid being too partial:

("*a*) The rider is exposed to cold and mud, being only 6 inches off the road.

"(*b*) It is a lonely and unsociable pastime.

"(*c*) The machine is punished for its accessibility by being exposed to wet and to blows.

"(*d*) The rider is not in an arm chair.

"(*e*) He must dismount if stopped by traffic, and his machine will not stand (as they say in Ireland) when standing.

"(*f*) His carriage is so small and delicate that he is bullied by larger vehicles.

"(*g*) He must make violent bodily efforts to start his machine.

"(*h*) Skidding means bodily injury.

"(*i*) His weight of baggage is very restricted.

"(*j*) His position is fatigueing.

"(*k*) His mount is not compatible with the town clothes required for calling on friends, or with the clean hands associated with social functions.

"(*l*) Breakdowns are more frequent than on good cars.

"(*m*) The motor is not protected from road shocks by springs.

"(*n*) The good running of the motor cannot be tested except when the rider is on it.

"(*o*) The exposed position of his calves makes him particularly attractive to large dogs."

ADVICE FROM FRIENDS.

When he commenced motoring on two wheels he was warned that "motor cycling is cold work; you will get hot with the

violent work of pedaling uphill, and will catch a fresh cold on every down grade."

"The getting hot is true, the catching cold is false, and I recollect an experience of 35 miles through two inches of snow in a north wind. If ever I felt otherwise than very warm I cut off a little gas and pedalled. The extra speed uphill is a pleasure, and warmth is soon accumulated under thick motoring garments."

Mud and dust are drawbacks which should be considered in design by the elimination of all superfluous excrescences, such as straps, champing pieces, mouldings and levers. Smoothness of exterior surfaces make for cleanliness, and to illustrate the point he suggests a comparison in motor cars, between "the simple lines of some American designs" and the "ungainly aldermanic fulness of the bulbous profile which is imparted at great expense to the back of some much prized 'tonneau' bodies."

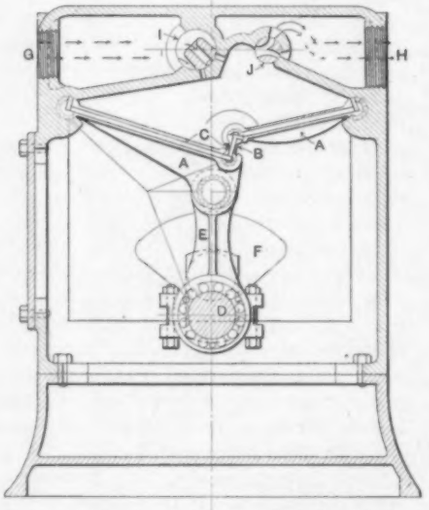
SKIDDING A BUGABOO.

Skidding, which is supposed by many to be one of the drawbacks of motor cycling, has no terrors for the author. "I have skidded so little," he says, "that I am scarcely competent to indicate the best way to do it. I will leave it to those who have had a good deal of this experience to prove that it does not occur. I know, however, that the character of the road surface which produces skidding with a car is quite different to that which requires caution with a bicycle. It is generally known, I think, that an exhaust valve lifter is indispensable in this connection; but a very delicate carbureter which does not fail to give mild explosions when the throttle is nearly closed, and which in conjunction with mechanical valves will keep the engine running "dead slow," is a useful safeguard against skidding. The next safeguard is a flexible drive. Advantage in this direction will be derived from flywheels being much larger without being heavier. The jerks will be diminished, and as it is the beginning of a slip that must be avoided, every trifle counts. Also, if these larger flywheels were to rotate in the opposite direction to the road wheels (like the Enfield), then gyrostatic action would assist the rider in keeping vertical instead of acting in the opposite sense, as they do now."

Three things he thinks are retarding the progress of motor cycle design. (1) There is not enough work done in the engineer's drawing office. [He might have extended this statement, with truth, to include the larger motor car.] (2) The influence of fashion is far too strong, and is only inadequately counterbalanced by cranks and "Mania." (3) Ready-made accessories, however good, which must be fitted in hamper and distort the unity of design.

MANUFACTURERS' MANIA.

Defining "mania," he says: "One man has a weight mania and saves on his silencer and front forks. One saves space by placing the engine in the road wheel. One has a narrow tread mania and sacrifices bearings. One has a chain drive mania. One has a free engine mania, and makes his engine difficult to ride in traffic. Some think that one man can only work one lever, etc. The little fads are admirable for us all because the faddist gives an intensity of study to some excellent detail which results in its perfection. But it is time that an unbiased engineer should mass and collate information and give us first the drawing and then the fact of a well-plated 100 pound machine with a moderately narrow tread, full width bottom bracket, strong front forks and pedal cranks, a flexible chain-drive, two speeds, a cool 3 horse power engine—with a third bearing on it—that can take its re-start from the road wheels and be free at will, mechanical valves, replaceable parts, sound and well-protected ignition gear, spring seat and handles if not a spring frame, good brakes, a carrier incorporated in the design, and also gear cases, etc., etc. Let even the accessories be so re-designed that they fall in perfectly with the general scheme."



SLEEPER STEAM ENGINE.

So impressed is he with the possibilities of the little vehicle that even the Gordon Bennett race is not in his judgment beyond its scope. "If we should get a very straight track," he says, "I do not feel sure that this race might not yet fall to the lot of a motor bicycle. It is true that the limit of speed for turning a corner is 30 miles an hour (with 30 yards radius the slope is 60 per cent.). But this is the blackest feature, otherwise the bicycle will have advantages for passing and choosing a good track.

The property occupied as the Women's Building during the Pan-American Exposition in Buffalo has been secured by an organization of residents. It is intended to form an automobile and outing club, with headquarters in the building.

Sleeper Steam Engine for Automobile or Marine Use.

A decided novelty in small steam engines is presented in the engine herewith illustrated in section. It is not a rotary engine, but it is claimed to possess one at least of the theoretical advantages of that rather impractical machine, in that it gives less opportunity, in small sizes at least, for condensation of the steam. This is partly due to its design, but largely also to the fact that it can be run at rather unusual speeds, owing to the fact that, as it has no cross-head, its reciprocating parts are extremely light and mechanical vibration is therefore minimized. From the drawing it will be seen that its most characteristic feature is the substitution of a pair of plates, *AA*, flexibly connected by a third, *B*, for the usual piston. These work in a chamber of rectangular section, and are kept tight at the edges by packing strips, *C*. The larger of the plate, *A*, is connected to the crank-pin, *D*, by the short connecting rod, *E*, and the cranks are balanced by the counter weight, *F*. Roller bearings at all points of motion minimize the friction. As the rollers in the joints of the oscillating plates, *A A B*, do not revolve in a complete circle, all that is needed is that they work in a chamber of sufficient length for the motion they actually receive.

Steam enters at *G* and exhausts at *H*. The valves are of the Corliss type, and are indicated at *I J*. They are operated by an eccentric from the shaft.

These engines are built by their makers, the Sleeper Engine Co., Ltd., Montreal, in several styles for marine and electrical work, automobile propulsion, etc. The engine illustrated is rated at 12 horse power and weighs approximately 600 pounds. It has a rated speed of 700 revolutions.

Another engine, of similar form, is made with a high pressure chamber (it cannot be called a cylinder) in the top and a low pressure cylinder in the base, and is rated at 25 horse power. A 5-horse power marine engine is made of circular or drum-shaped form, with three steam chambers equally spaced around it, with the diaphragms, as they may be called, working through rollers on a single eccentric, no connecting rods being used. This motor weighs 100 pounds, and is 12 inches in diameter. A similar engine for automobile work weighs but 35 pounds.

The makers quote from a test conducted by the engineering faculty of McGill University the following figures regarding their 12 horse power simple engine: brake horse power, 13.1; revolutions per minute, 726; steam used per brake horse power per hour, 36.4 pounds; steam pressure gauge, 84 pounds. This is certainly a very moderate steam consumption for so small an engine.

A reliability run is planned for Memorial Day by the Colorado Automobile Club.

Gordon Bennett Race.

(*Continued from page 396.*)

Another suggestion that has found favor is to send a pilot car over the course at high speed half an hour before the start of the race. This is especially important in a district, such as is embraced in the Irish course, in which the greater part of the population can have no realizing sense of the terrific speed at which road racing cars travel, and so might not appreciate the necessity for keeping off the course during the race.

Both the course and all approaches will be cleared of all vehicular traffic for an hour before the start. Motor cyclists have been asked to volunteer as aides in the work of patroling the course and carrying messages, and it is likely that the military authorities will be asked to establish a field telegraph service along the route.

Illustrated notices, printed in both the English and Irish languages, will probably be circulated prior to the race, calling attention to the necessity of public cooperation in keeping the course clear. Elaborate arrangements for accurate timing of the event are under consideration, including the appointment of timekeepers for the contestants in addition to the official club timekeepers.

The regulation of controls is receiving special attention from the committees in charge. It is proposed to place at each control an exact timepiece such as a ship's chronometer, which is to be in plain view of the competitors and the spectators by which they can, if desired, check the timing of the official timekeepers, the latter being required to post the times of arrival conspicuously on a blackboard. The times of arrival and departure will also be marked on a card and handed to the competitor, so that he can constantly know his official times throughout the race. To prevent any competitor from crossing the arrival line of a control at full speed, and after slowing up, coming back for his time card, it is proposed to make two lines, about twenty feet apart, between which the time of arrival will be recorded only. Any competitor overrunning the second line will, therefore, have to recross it before his time is taken. By this he would needlessly lose time, and, therefore, care in regulating speed on the approach to a control will have to be exercised by all competitors.

If the Automobile Club of France consents, a rigid rule will be enforced that will disqualify any car on which the competitor "replenishes his car with either fuel, or water, or lubricating oil, or effects any adjustment whatever, between the time of arrival in a control and the expiration of the time allowed for that control." When the time for the start of a car from the control has expired, the replenishment or adjustment will be permitted, but the time so occupied will be counted in as actual racing time. This severe restriction has been decided upon in a spirit of fairness to neutralize as far as possible the element of luck. Some minor mishap, for instance, might occur to a machine near enough to a control so that the machine could cross the line without a stop. If no restriction was placed on adjustments at controls, the operator could, possibly, speedily make repairs or replacements without loss of running time. On the other hand, a similar mishap occurring at a considerable distance from a control might necessitate a road stop for repairs, and the time so occupied would mean a loss of several minutes in running time.

To prevent too long delays in controls it is proposed also to limit the stop in each to the time equivalent of the passage through the control of a car running at the rate of twenty miles an hour.

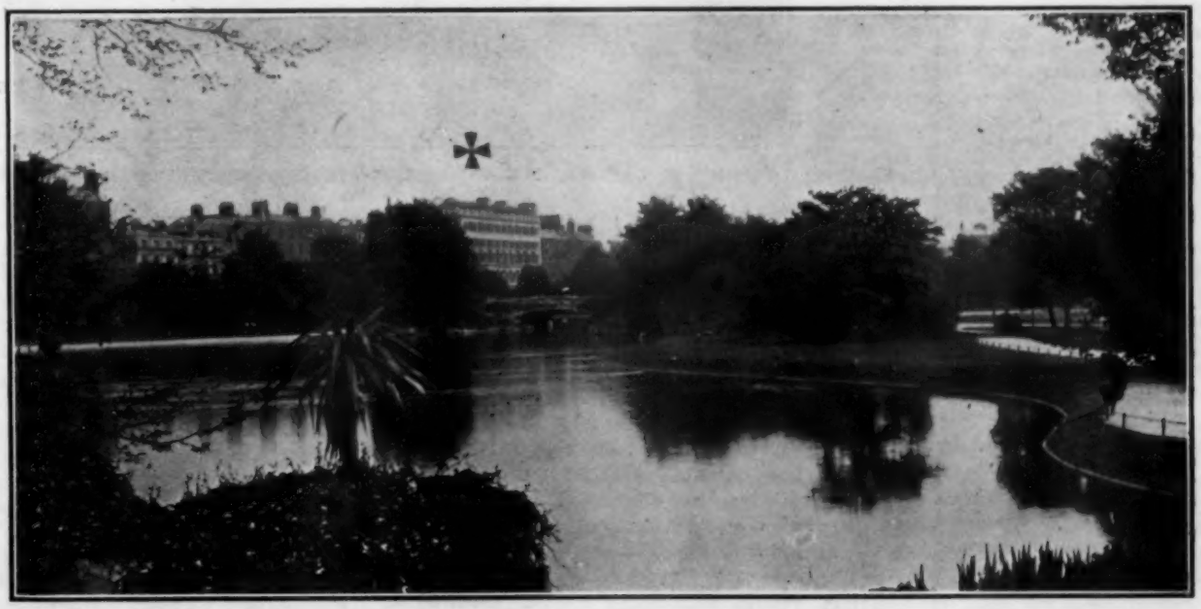
Whether or not the driver and mechanic of any machine can employ help during the race to make repairs or adjustments is a question yet to be settled. The British club believes that either there should be no rule at all, or else that a rule should confine the available help to the driver and the mechanic of each car. In former races regular breakdown gangs of skilled men helped the contestants to keep the cars in condition to complete the run. Car construction certainly ought to be sufficiently advanced now to carry any one of the competitors through, barring unforeseen accidents.

The regular Gordon Bennett rules giving two minute intervals between the cars at starting will be observed. And the time of starting is 7 o'clock, if the committee's recommendation is carried out. At that time of the year in Ireland, the race would therefore be started in broad daylight.

We here reproduce the complete program of the "Irish Automobile Fortnight," as framed by the race committee.

In carrying out the program, the Irish Automobile Club will give aid to the British club committees, the latter having an onerous task in carrying to a successful finish the international race. Mr. R. J. Mecredy, 2 Dame Court, Dublin, is honorary secretary of the Irish club, and he will be glad doubtless to give any information to motorists who intend to visit Ireland during the races.

In the gymkhana at the Phœnix Park race course, it is probable that makers who have not been able to get machines into the great race, will have an opportunity to exhibit their machines doing "stunts."



STEPHEN'S GREEN PARK IN DUBLIN, IRELAND—Shelbourne Hotel marked with cross, where quarters for the American team have been provided.

The speed trials on July 4 are conditional on the granting of special permission by the authorities. These trials will include sections for motor cycles, touring and racing cars. The proposition is made also to subdivide the touring car section into classes, according to selling price.

Irish Automobile Fortnight.

FIRST DAY, Wednesday, July 1st: Exhibition of the Competing Cars at Earlsfort Rink, Dublin, from 4 p. m. on Tuesday, June 30th, to 4 p. m. on Wednesday, July 1st; Weighing of the Racing Cars.

SECOND DAY, Thursday, July 2d: The Gordon Bennett Race.

THIRD DAY, Friday, July 3d: Gymkhana at the Phœnix Park, Dublin, and if H. E. the Lord Lieutenant will consent, a torchlight procession to the Castle at night.

FOURTH DAY, Saturday, July 4th: Speed Trials in the Phœnix Park, Dublin.

FIFTH DAY, Sunday, July 5th: Rest.

SIXTH DAY Monday, July 6th: Tour to Newcastle and Belfast. Some of the party might sleep at Newcastle and others at Belfast.

SEVENTH DAY, Tuesday, July 7th: Four-mile Time Test at Newcastle. Hill-climbing Trial for the Henry Edmunds Trophy. Sleep, some at Newcastle and some at Belfast.

EIGHTH DAY, Wednesday, July 8th: Return to Dublin and sleep there.

NINTH DAY, Thursday, July 9th: Start for Cork. Some would drive to Cork direct (156 miles); others would go *via* Waterford and sleep there; others *via* Lismore and sleep there.

TENTH DAY, Friday, July 10th: Arrival at Cork. Eliminating Race for Motor Boats at Queenstown, in the morning. Speed or Hill-climbing Trial at Cork in the afternoon.

ELEVENTH DAY, Saturday, July 11th: Motor Boat Race for the Alfred Harmsworth Cup at Queenstown.

TWELFTH DAY, Sunday, July 12th: Rest.

THIRTEENTH DAY: Monday, July 13th: Start of tour through the beautiful scenery of the South, some of the party sleeping at one town, others at other towns.

FOURTEENTH DAY, Tuesday, July 14th: Arrival at Killarney.

FIFTEENTH DAY, Wednesday, July 15th: Hill-climbing Trial on the Killorglin-Tralee Road for the County of Kerry Cup, and Termination of the official tour.

These events may also include a contest for the *Daily Mail* 100-guinea cup, for the fastest car, weighing under 100 kilos, and employing any form of power. The cup is now in the possession of M. Serpollet, who won it in 1902.

Hill climbing contests will take place at Newcastle in the north of Ireland, and later in the south of Ireland, in the neighborhood of Killarney. The motor boat trials at Queenstown will also be an attractive feature of this comprehensive program of automobile midsummer sport.

In the big race the first starter will be F. S. Edge, who is the cup winner of last year. He will be known as British No. 1. Chevalier Rene de Knyff will be the second starter, and will be known as French No. 1. The next starter will be an American, and the third man of our team will start eleventh on the list.

English Novelties at Agricultural Hall.

British Public Sated With Five Shows in Five Months—Gordon-Bennett Eliminating Races to Be Run About April 10—Club Members Stirred Over Numbering Law.

Staff Correspondence.

LONDON, March 25.—We are on the throes of our fifth automobile exhibition in London since November last, and both automobilists and the trade are more than inclined to cry "Hold, enough!" The present exhibition, which is ranged under the roof of the Agricultural Hall, is the private speculation of the proprietor of a motor paper which last year had the patronage of the Automobile Club, but which now sails entirely under its own colors. But for those that have gone before, it would be a great show, but the visitor finds himself so frequently examining the identical exhibits he has scrutinized at the Paris salon, at Earl's Court, at the Crystal Palace, and now again at Islington, that he very reasonably cries *Satis* and wonders if automobile engineers have got to the end of their strings.

Many of the exhibitors, particularly large importing agents such as the British Automobile Syndicate. Friswell's and others, make up in glory of stand decoration for lack of novelty. The Syndicate has quite-out-syndicated itself and has piled up an erection of painted pillars plinths and fascias, with garlands and festoons of paper flowers, all surmounted by an earl's coronet, gorgeous and gay enough to enthrone a royal Queen of the May rather than such stern modernites as automobiles. The gangways are narrow between the stands, whereon the exhibits are much too closely packed.

For calm and comfortable inspection this Islington exhibit falls far below that of the Crystal Palace, in addition to being located in a most unsavory and ungetatable neighborhood. However, up to the moment of writing, the exhibition has been fairly well attended, though if business is resulting is quite another matter.

The search for novelties over and above those that have been referred to in connection with past shows, has the following results:

VALVES AUTOMATIC OR MECHANICAL.

The British Germain Co. shows a 40 horse power four-cylinder engine which is rather notably fitted with regard to its induction valves. These can be automatic in action or mechanically actuated at will, and this is done in quite an ingenious manner. The valves are fitted just as ordinary induction valves save that the valve stems are brought right through the valve domes, are there provided with another spring, and stand under rocking tappet levers, rocking on a pivot on one side of the valve dome. The other end of the tappet lever is hooked to take the upper end of a strong coiled spring which has its lower end anchored to a lug on the cylinder head casting. The lay shaft carries suitable cams actuating rising rods whose upper ends bear against the under side of the spring-held ends of the rocking tappets, lifting these when it is necessary to close the induction valves. The valves are caused to open by the down-pull of the spiral springs already mentioned as the rising rods fall.

STREET IN CARLOW, IRELAND, ON ROUTE OF THE GORDON BENNETT RACE.

The whole of this mechanical opening gear can be removed in a few minutes and the engine left with automatic induction valves. Just what special advantages the makers claim for this combination is not known, save that if the owner wants mechanically actuated induction valves he can have them at his pleasure.

SIMPLE WATER PUMP DRIVE.

Another neat and simple fitting is the pump drive, by which gear, chain or friction drive for this very necessary organ is dispensed with. The pump is simply secured to the crank chamber by two set-screws, and the half-time shaft is suitably produced outside the crank chamber to engage with the pump spindle as shown by accompanying sketch. When it is desired to dismount the pump, the ring over the driving end of the cam-shaft is slipped back, the two set-screws and two unions are undone, and there is your pump free. The whole arrangement is so simple and yet so effective that one only marvels it has not been done before.

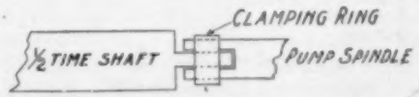
COPPER JACKET WITH SPUN JOINTS.

This engine, too, has copper water jackets without any soldered joints, these joints being made in a simple and ingenious manner. The outer walls of the cylinders are cast with grooves shaped as in the accompanying drawing, and the edges of the copper water jacket are spun into them so as to make a perfect water-tight joint, which remains quite unaffected by expansion and contraction due to extreme variations of temperature.

LANGDON-DAVIES CHANGE GEAR.

An improved form of change speed gear in which the gear wheels are always in mesh is shown by the Langdon-Davies Motor Co., on the Soames car. Change speed gears of this description have not grown very much into favor, chiefly by reason of the difficulty experienced in preventing the edges of the slot in the shaft, provided for the lateral movement of the locking key, from burring, and also the edges of the pockets formed in the bosses of the gear wheels to take the key from similar damage. Messrs. Langdon & Davies have schemed a neat arrangement by which the gear wheels do not rest in the shaft at all, but are carried on intervening collars set between each gear wheel, which collars are fast in the shaft and have a nosed piece dipping down into the slot, which obliges the locking key to dip underneath and clear its last wheel properly when passing from one wheel to the other. In former gears of this class trouble was experienced from the sliding key failing to move right up into the pocket in the boss of the gear wheel to be locked into the drive, but in the special arrangement under discussion, a supplementary wedging key follows the locking key proper and sending it home retains it there firmly and securely.

In a 16 horse power car shown by the New Orleans Motor Co., of Twickenham, a four-speed change gear is shown in which, when the engine is driving through on the top or fourth speed, no toothed wheels whatever are in mesh, the secondary shaft carrying the gear wheels affording the first, second, third and reverse speeds being at rest. It is not possible to describe the means by which this is done

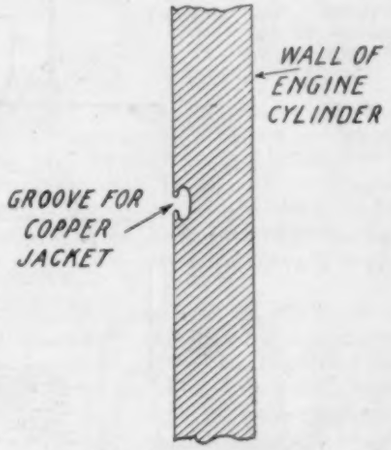


GERMAIN WATER PUMP CONNECTION.

without a diagram, but in striking the fourth speed all wheels are moved out of mesh by a clever combination of two racks. The advantage of the idleness of the secondary shaft is obvious, as a good deal more power is consumed by rotating this shaft with its three wheels ploughing through the oil bath than is generally imagined. This cutting out of the secondary or idle shaft on the fourth when direct drive is employed has never been effected on this side before, and among the *cognocenti* the New Orleans gear is creating a vast amount of interest.

IMPROVED ELECTROLYTE.

The Agricultural Hall Show has, too, a particular surprise in ignition matters. Messrs. Peto & Radford, the constructors of an excellent accumulator, known as "The Armoured," have discovered that a paste formed of sulphate of lead and a sulphuric acid solution forms a remarkably efficient and handy electrolyte which renders unnecessary the sealing up of the accumulator and does not splash about. Moreover, the accumulators so filled



GERMAIN WATER JACKET JOINT.

showed an increased voltage over those which are served only with the ordinary solution.

SPARK INTENSIFYING CONDENSER.

Messrs. Peto & Radford also show a neat form of condenser to be fitted to the outside of the ordinary induction coil, which greatly intensifies the spark across the spark gap of the sparking plug. The action of this condenser with regard to the plug is said to be very much that of a Leyden jar. The instrument is shown fitted to an ignition installation, the condenser being thrown in and out of the circuit by means of a switch, and when the condenser is working ample ocular demonstration is given of its effect at the spark gap of the plug. There the spark appears to be intensified about ten times.

The ordinary high-tension jump-spark ignition, to judge by the improvements which are every day coming along, is going to give magneto ignition a good run for its money.

GORDON BENNETT TRIALS.

Everything now seems in apple pie order for the decision of this great event in Ireland on July 2. The eliminating race will now in all probability take place on or around April 10, as the Star Motor Co., which was the only other firm except the Napier that had the pluck to put down its £500 forfeit money, now refuses to extend the date of the trial to let in one or more firms that regretted their want of pluck when it was too late. Although the Star Co. is well within its rights, it is rather a pity that it cannot be brought to look at the matter in a more sportsmanlike manner, as had it seen its way clear to acquiesce, there might have been six or seven cars entered for the eliminating tests.

The Cup winner of last year may face the starter again, for although it has been purchased by the Marquis of Anglesea, he has offered it to the club should anything arise which would require its services.

TO VOTE ON NUMBERING.

A postal ballot of the whole Royal Automobile Club is to be taken on the now burning question of car numbering, the club committee being apparently as strongly convinced of ceding this point as the representative meeting gathered at the club lately were to the contrary. The strongest argument adduced by the committee in favor of their contention is the means it provides for the capture and punishment of evil doers—the careless ruffians who drive through towns and villages at breakneck speed without the slightest relevance to the comfort and safety of other users of the highway, whether man or beast. These happily are in a very small minority, and it seems particularly hard that the misdemeanors of this minute section should condemn all owners of automobiles to drive about with their private cars numbered like hackney carriages or stage coaches, and I very much fancy that the result of the postal ballot will inform the legislative committee with the utmost emphasis that the members of the Automobile Club are pronouncedly opposed to the suggestion that their carriages shall be numbered.

Status of Automobile Construction in the German Empire.

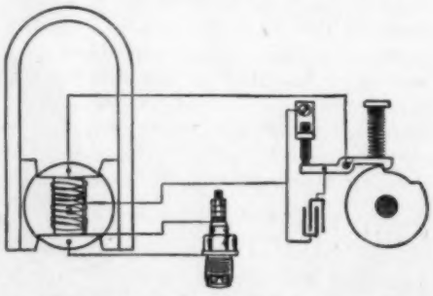
A Review of Present Conditions as Exemplified at the Berlin Show—An Ignition System Outranks Automobile Construction in Technical Importance—Attention Given to Heavy Tractors.

Special Correspondence.

BERLIN, March 25.—While the Paris automobile show to all intents and purposes was nothing but a Mercedes Salon, there was an effort clearly evinced at the Berlin exhibition for producing constructions possessing some originality at least in the minor details. For some time past the Mercedes type has not been copied nearly so slavishly as formerly, it being recognized that this type is after all very complicated and that a good car can only be produced at a price within reach if important simplifications are resorted to. At the same time it is well understood that credit is due to Mr. Maybach, the chief engineer of the Daimler Motoren Gesellschaft, for the most important improvements in construction which are now embodied in nearly all German automobiles. The gear-driven induction valves, the almost universal employment of magneto ignition, the honeycomb cooler, the steel frame, with reaches pressed from sheets only 4 millimeters thick, and with rounded lower edges—these are things which German as well as French and American constructors have borrowed from the Mercedes type. But on the other hand, it is not forgotten that the modern design of automobile, with its oblique steering post system and cased-in valve stems, is exclusively French invention, nor that the built-in valve-actuating rod was originated by Major Krebs, the director of the Panhard et Levassor establishment, and that these features also were imitated by the whole world, including the Daimler Motoren Gesellschaft.

While only three or four years ago it was immensely difficult to build a good motor vehicle, those who cannot produce a very acceptable machine to-day must either be very short of capital or very deficient in intelligence. It was indeed proven at the German show that even concerns with most limited facilities could furnish a tolerably good product and that several large firms construct vehicles equal to the Mercedes type in performance and value, despite their much lower prices.

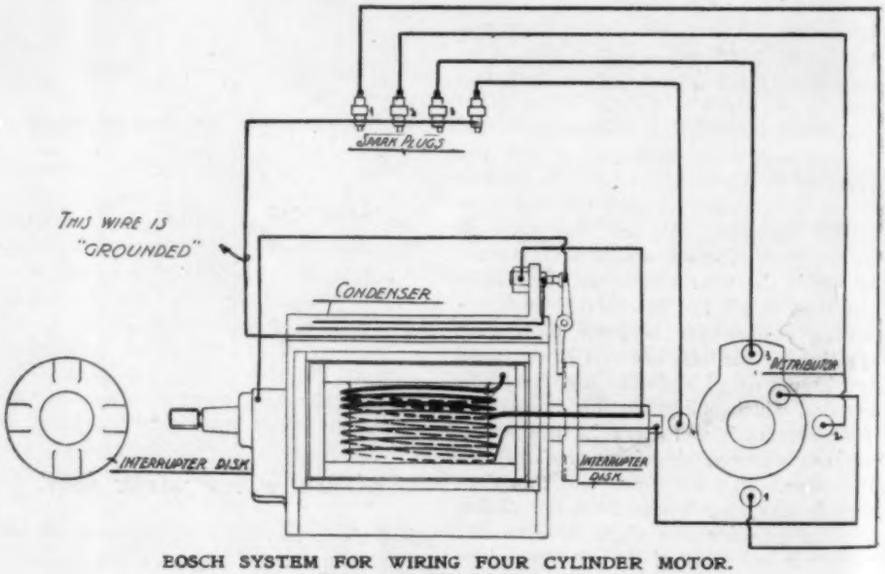
As to technical importance, none of the complete automobiles at the show could be considered as ranking with the new ignition apparatus devised by Robert Bosch. For some time the rivalry between battery ignition and magneto ignition has been intense. The French constructors remained faithful to the battery for a long time, because this system requires no special structural work and does not complicate motor design. Against this stands the disadvantage of carrying the battery and induction coil and the weakness of the spark obtained. The German constructors, and especially the Daimler people, on these grounds gave their preference to the magneto. And now the new Bosch ignition system combines the strong spark of the magneto with all the



WIRING FOR SINGLE CYLINDER MOTOR.
By Courtesy of Der Motorwagen.

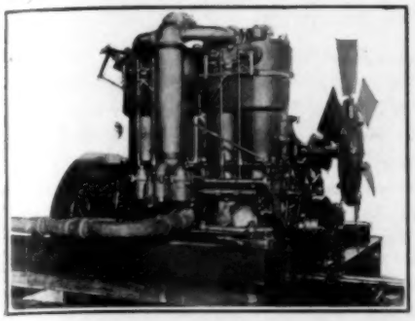
advantages of battery ignition, besides dispensing with battery and induction coil. The new apparatus was already exhibited at the Paris Salon in December, 1902, but was barely noticed until Ober-Ingenieur Urtel drew attention to its great importance in the publication, "Der Motorwagen." At the exhibition here in Berlin constructors and automobilists crowded around the device. Bosch generates in the armature of his magnet a primary current as well as a secondary current induced by the former. In the plug a jump spark is first formed by the secondary current and acts, so to say, as a bridge for carrying the very hot arc of the primary current across. A Bosch spark of this nature consumes instantaneously any drop of oil which may have splashed onto the plug, and even melts immediately a thin copper wire. The wiring used with this system is shown for a one-cylinder motor in Fig. 1, and for a four cylinder motor in Fig. 2.

Next in order of notability at the exhibition came a gigantic tractor designed by Joseph Vollmer, of the Neue Automobil-Gesellschaft and built by the Allgemeine Electricitäts-Gesellschaft. The enormous dimensions of this wagon are hardly noticeable in the photograph because of the very felicitous symmetry existing between the various parts of the vehicle. The diameter of the hind wheels of this traction reaches 1m. 700 mm. (67 inches); the whole vehicle is almost 8m. (26.24 feet) long, and its lowest point is 600 mm. (23.6 inches) above the ground. The entire motor equipment is protected underneath by a sheet metal guard against sand and mud. The motor, though not conforming to all the very latest requirements, should prove well adapted for its work. The cylinder dimensions are 140 mm. bore and 170 mm. stroke; the number of shaft revolutions per minute, 650. Though much larger than a 70 or 90 horse power motor for a racing machine, this motor gives only 40 horse power, because, being intended for unremitting hard service, it was considered advisable to protect the bearings by using low compression and low piston speed. It is worth noting that both the two-to-one shaft and the centrifugal pump of the cooling system in this large motor are mounted in ball bearings. Also in the vehicle portion



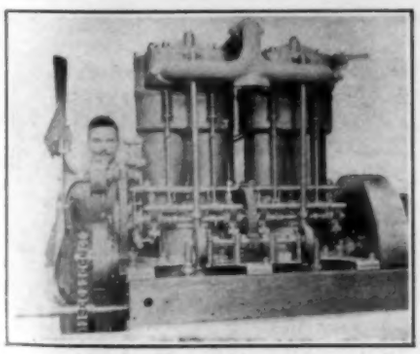
BOSCH SYSTEM FOR WIRING FOUR CYLINDER MOTOR.
By Courtesy of Der Motorwagen.

are ball bearings extensively employed. The gears, the wheels and the steering mechanism are so mounted. This vehicle, with its two trailing wagons, being primarily intended for travel through deep



MOTOR FOR 40-H-P. TRACTOR—Exhaust Side.
By Courtesy of Der Motorwagen.

sand, it was provided with a large windlass which can be connected with the motor and by means of which the trailers may be drawn up a steep hill separately after the tractor has ascended it. In a few weeks this machine will be shipped over Hamburg to its destination in German Southwest Africa. The German colonies there are not situated on the swampy, fever-ridden coast, but in the interior, and separated from the coast region by a desert strip of shifting sand which in places is several kilometers broad. The traffic between the colonies and the coast is at present carried on by means of several hundred oxcarts, 30 to 40 oxen being required to draw each wagon, and frequently less than one-half of this number come through alive, owing to lack of water in the desert and the gadflies. The trip, moreover, with these primitive conveyances, occupies from one to two weeks, while the tractor is relied upon to make it in two days and at a much lower cost. So as to prevent the wheels from cutting into the deep sand, the broad wheel tires may be further broadened by screwing onto them iron rings 800 mm. (31.4 inches) wide. Before long this first tractor is to be followed by three more of



MOTOR FOR 40-H-P. TRACTOR—Ignition Side.
By Courtesy of Der Motorwagen.

the same or similar pattern, so as to assure the regularity of the traffic if repairs become necessary.

The Daimler Company, as you probably know, builds a great many freight vehicles besides its celebrated Mercedes vehicles and exhibited some of them in Berlin; they were not built at Cannstatt, however, but at the Marienfelde factory, now a branch of the Cannstatt establishment. I do not know whether the fate of this factory has become generally known in other countries. The Marienfelde works grew from small beginnings, was then launched as a stock company with a paid-up capital of five million marks and commenced an extremely expensive series of experiments looking to the development of new vehicle types. When finally these had been so far perfected that they operated satisfactorily, they were not only mere counterparts of the Daimler pattern, whose license the Marienfelde company had acquired, but it was also found that the entire capital of five million marks had been used up and that the company was in debt besides. To prevent a complete collapse there was nothing left but an unconditional surrender to the Daimler company, and thus the latter now disposes over one factory at Cannstatt, one at Marienfelde near Berlin and one at Wiener Neustadt, near Vienna, and the announcement of an amalgamation with the Milnes works in England is hourly expected. With a few more steps in this direction we may perhaps by degrees reach the conditions of an American "trust" in the field of automobile manufacture.

Even now the German War Office shows great partiality for the Daimler vehicle and had at the exhibition a Daimler transport wagon in full marching equipment, though also a Dürkopp "Personenwagen" (vehicles to carry persons) which is seen to the left in the photograph. The Dürkopp vehicles are made by one of the most highly reputed German firms, the Bielefelder Motorwagon-Fabrik, and may be considered as a cross between Mercedes and Panhard construction.

A worthy exhibit was made of the noted John Fowler steam wagons which are made not only in England, but also in Magdeburg, Germany.

Very notable delivery wagons were shown by the Berliner Motorwagen-Fabrik of Tempelhof, whose neat and rather light vehicles have met with an extensive sale, especially in Berlin. These vehicles

TRANSPORT WAGON AND AUTOMOBILE.
Exhibited by the German War Office.
By Courtesy of Der Motorwagen.

have a single-cylinder motor in front, from which the power is transmitted direct by a clutch to a cogwheel mechanism located on the rear axle. Only two forward gear speeds are used, and reverse is effected by friction wheels.

The Adler-Fahrradwerke showed a

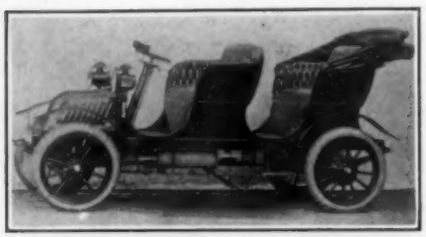
VOLLMER'S 40-HORSEPOWER TRACTOR WITH TRAILERS.
For German Colonies in Southwest Africa.
By Courtesy of Der Motorwagen.

pretty delivery wagon besides numerous pleasure vehicles. The construction includes a two-cylinder vertical motor in front, a tubular frame and a rear driving

IXION BICYCLE WITH TWO-CYCLE MOTOR.
By Courtesy of Der Motorwagen.

axle with universal joints. The Adler vehicles are among the most popular in Germany and their designer has so far avoided outright copying of the Daimler type.

Gear-actuated induction valves are used, however, but are operated from the same camshaft as the exhaust valves, so that all valves are on the same side of the motor. The tubular frame now used in these cars



ADLER COMPANY'S PHAETON.
By Courtesy of Der Motorwagen.

will also shortly give way to a sheet steel construction.

More than ordinary praise was bestowed upon a very pretty delivery wagon shown by the Protos Motorenfabrik. This was perhaps mainly due to its external finish, yet the principal feature was the entire absence of vibration from its motor. This motor has gear-driven inlet and exhaust valves and two cylinders. The crank pins are, however, both on the same side of the shaft and the balancing of the motor is effected by means of a small, heavy counter-piston driven from a crank pin opposite the two others.

A racing boat with a 50 horse power Daimler boat motor and the Mercedes 16 horse power marine motor with reverse gear, were the center of much interested inquiry, and are intended to be operated optionally with alcohol or gasoline.

The Ixion motor bicycle, of which an illustration is shown, was generally noticed, partly because the motor was of the two-cycle pattern so generally adopted for American power boats, and partly because the machine was nothing but a common bicycle with the motor added, driving the front wheel by a friction wheel. Though the contrivance operated well, a rear drive will be adopted.

'OHN FOWLER STEAM TRACTOR "MALTA."
Made at Magdeburg, Germany.
By Courtesy of Der Motorwagen.

Farthest North By Automobile.

Tour of the Land of the Midnight Sun Planned by Charles J. Glidden, Who Will Drive 4,500 Miles in Europe This Summer.

Special Correspondence.

BOSTON, April 6.—Charles J. Glidden, of Boston, who has probably covered a greater total of mileage of European highways by automobile than any other American, told a few friends at the automobilists' banquet in Boston recently, that he had planned a trip for the coming summer that would be of interest because of the unusual and out-of-the-way places it would reach, rather than for the amount of territory covered. He intends to take his automobile farther North than a motor vehicle has ever gone before.

"I made a record for a long tour last year, when, you remember, my total mileage was about 5,300 miles," said Mr. Glidden in outlining his plan to THE AUTOMOBILE correspondent. "Now I want to tour up into the Land of the Midnight Sun, and I shall try to reach the out-of-the-way places in northern Sweden and Denmark. There are good highways from Madrid, in Spain, latitude 40 north, to latitude 64 north, in Norway, a distance estimated at about 2,600 miles. The only water crossing necessary is from Frederikshavn in Denmark, to Gothenburg in Sweden, fifty miles."

Mr. Glidden's extensive collection of road books and maps, which form an interesting special library in his rooms in the Hotel Touraine, have enabled him to plot out his route almost as carefully and with as great a knowledge of details as if he had already been over the roads; and he has outlined a course which will take him within two degrees of the Arctic Circle. He is now in correspondence with Norwegian officials in an effort to find out whether it will be feasible to tour within the circle.

DAIMLER TRUCK MADE AT MARIENFELDE NEAR BERLIN.
By Courtesy of Der Motorwagen.

He will use a Napier car, as he did before on his European tour; but the new automobile, which will be especially constructed under the supervision of S. F. Edge, will be of 16 horse power, with low gear to enable it to surmount the heavy grades in Norway without trouble. It will have a maximum speed on the level of forty miles per hour.

The itinerary so far outlined contemplates a start at London and a drive through southwestern England and Wales before crossing at Holyhead to Dublin, to be present at the James Gordon Bennett cup race. After the races, Mr. Glidden will tour through Northern Ireland and the Irish lake district, cross to Scotland, then to Christiania in Norway, and from there northward, to Trondjem or beyond. On the return southward his projected route will take him through Sweden to Denmark, then through Germany, Holland, Belgium, and back to England by

boat from the Hook of Holland to Norwich. The entire course would be about 4,500 miles. Mr. Glidden would like to try a run through part of Russia, but he has found the road conditions against it. He will probably start abroad in early June.

When the two-score or more American automobilists return this summer from the races abroad and the foreign cracks also begin their invasion, the problem of transporting the big racing cars from meet to meet will become a puzzling one. The short jumps can be solved by taking the machines over the roads, but nothing short of a special express train will suffice for the long trips across the country.

Members of the Washington bicycle police force are amusing themselves by luring unwary automobile drivers into racing with them, upon which the chauffeurs are promptly halted and arrested.

Correspondence

Suggestion for Motor Caravan.

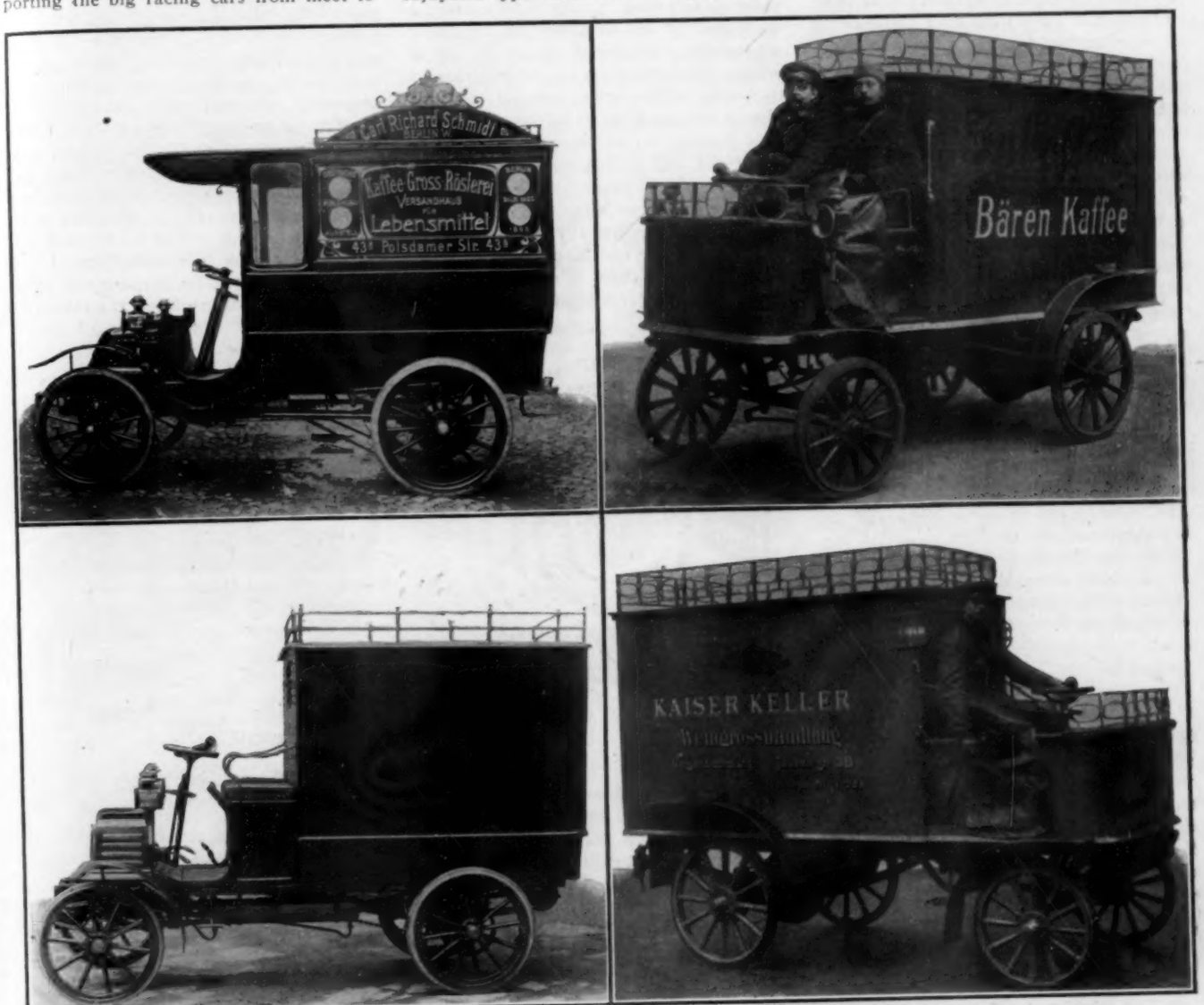
Editor THE AUTOMOBILE:

Sir:—In spite of the rapid development of powerful racing machines, trim runabouts and ponderous trucks, no manufacturer seems to have yet experimented with what might prove one of the most enjoyable types of motor carriages, which for want of a better term, might be styled a cruising automobile.

The joyous spirit of freedom, recreation and adventure that the yachtsman experiences in a week's cruise, need not be confined to the water. If there is pleasure afloat in cooking your own grub, sailing wherever you will, loafing and forgetting all business cares, there is the same sort of fun for the nature lover, breathing the fresh air of the forest, drinking from crystal springs, fishing along dashing streams and exploring unfamiliar countrysides.

Then why not a land cruise (if sailormen will pardon the incursion) in a handsome auto equipped with adequate facilities for cooking and sleeping. From a mechanical standpoint the plan is entirely feasible. The only actual obstacle would be probably the first hesitation due to the novelty of the idea, but this objection is by no means insurmountable.

In general construction the cruising motor car should be built on the lines of a stage, with cross seats on the roof, tally-ho fashion. The interior of the coach-body should include all the essential features of a yacht cabin. A gasoline stove should occupy one of the forward corners. The forward end of the cabin should be provided with lockers for dishes, food and stores. An ample ice-box could be easily provided. Beneath the windows hinged sleeping bunks should let down from the



By Courtesy of Der Motorwagen.

TYPES OF DELIVERY WAGONS POPULAR IN GERMANY.

Adler's Co.'s Business Wagon. Type Made at Tempelhof.

New "Protos" Delivery Wagon. Templehof Wagon Seen from Driver's Side.

sides of the coach. The interior fittings could be made as luxurious as the taste of the owner dictated.

The cruising automobile should be equipped with a motor of high horse power, capable of sending the machine up the steepest hills, and it should have fuel tanks that would provide sufficient gasoline to avoid the possibility of delays on routes not frequented by the ordinary touring motorist.

Such a machine would present great possibilities for the enjoyment of the summer months. The busy man could enjoy an over-Sunday trip each week into the freshness of the country. The man of leisure could take a small party of congenial friends off for a week's or a month's tour. The fisherman or the hunter could penetrate the mountain roads with a fully equipped camping outfit, and with a snug shelter and cooking facilities at hand wherever and whenever needed.

The owner of the cruising automobile would be subjected to no undesirable hotel accommodations, no annoying waits for trains, no wearisome tramps. In a quiet and unfrequented spot the machine could be drawn up at night, the supper cooked, and a long, refreshing sleep enjoyed in an air fragrant with pine or wild flowers.

The economy of such a means for journeying over country highways, especially if the expenses were shared by a party, would be especially striking in comparison with travel by rail or public stage, and the usual hotel accommodations.

Now for the clever manufacturer who will be bold enough to construct the cruiser! A cordial welcome from all true sportsmen to the pioneer who builds and buys!

ARTHUR C. MACK.

New York.

Soap for Dirty Hands.

Editor THE AUTOMOBILE:

Sir:—An article in your valuable paper on March 7 came to my notice in regard to a soap to remove motor-grime. It stated that there seemed to be no soap that would do the work and leave the hands in good condition. It also spoke of a long formula that any one could use, but which to my mind would be too much trouble and expense. I wish to say that there is a soap made in Boston, and which was exhibited at the Boston show, that will clean the hands of any kind of dirt and grime, and still leave the hands soft and natural, and besides will heal cuts and cracks. It is very reasonable in price and handy to carry. There is also a companion soap which can be used for the face. I would be pleased to let any of your readers know where to buy it.

Boston. F. F. B.

The Colorado Springs Automobile Co., recently incorporated, is to build a large repair shop and salesroom in that city, and is planning to operate a passenger line this summer.

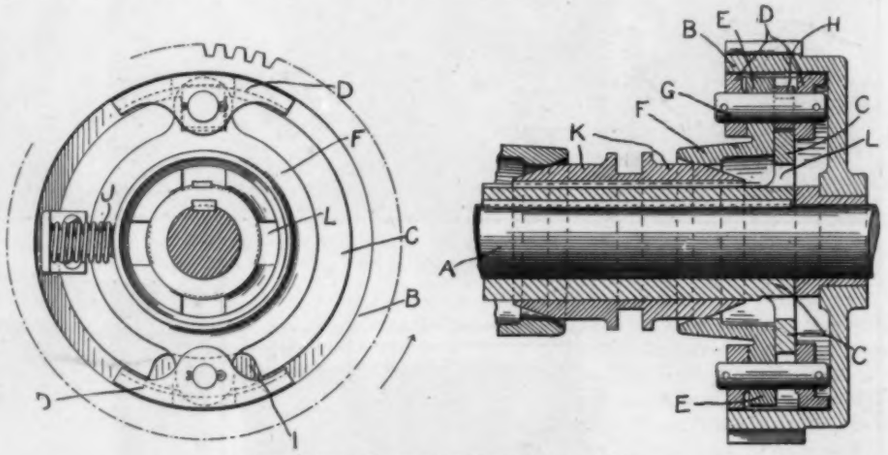
Patents

Friction Clutch Patents.

No. 722,697—C. R. Greuter, Holyoke, Mass.

This is a clutch of decidedly novel form and mode of operation, and is intended especially for work in which the power is transmitted always in one direction. It comprises a central driving shaft *A*, an outer driven ring *B*, which may carry a spur gear at its periphery as shown; a substantial disc-shaped carrier *C*, either integral with the shaft or attached thereto by a long hub as in the drawing; and two slotted friction shoes *D D*, loosely pivoted to a floating carrier *E*, which comprises a sort of hub *F* and two ears or lugs through which pass the pivot pins *G*, carrying the shoes when this carrier *E F* is oriented concentrically with the other members of the clutch, as shown in the drawing, the friction shoes *D D* cannot touch the outer ring, and the clutch is free. To engage the clutch piece *E F* is shifted slightly upward, engaging the upper rubbing shoe, and sidewise (to the right), rendering it eccentric to the rest of the clutch and engaging the lower friction shoe. To accomplish this movement the upper pivot pin passes through a square block *H*, movable radially in a square slot cut in the disc *C*, as indicated by the dotted lines. The lower pivot pin does not touch disc *C* at all, but shifts freely in a wide notch *I* cut therein. A spring *J*, working between suitable projections on disc *C* and the floating carrier *E*, tends normally to displace the latter sidewise and engage the clutch; it being understood that the upward radial movement of *E* is automatic and proceeds merely until both friction shoes are engaged.

The clutch is disengaged by the sliding thimble *K*, which engages the hub *F* and constrains the latter to a central position. In the form shown this thimble is slotted so as to have four taper prongs instead of being continuously circular, and these four prongs enter four apertures *L* in the disc *C*, to give *K* a greater range of movement, but this is not essential to the spirit of the invention.



GREUTER NOVEL FRICTION CLUTCH.

Combustion Chamber Clearing Device.

No. 716,069.—J. P. D. Liet, of Pars, France.

A device for clearing the combustion chamber of residual products of combustion. The piston uncovers a port near the end of its stroke, out of which the larger part of the exhaust gases first escapes. In passing out these pass through a nozzle arranged on the principle of the steam inspirator. A connection, opened by a mechanically operated valve, is established through a pipe from the combustion chamber to this inspirator, the intention being that the rush of the first body of exhaust gases shall create a suction to draw out the remainder through the valve just mentioned. A spring seated inlet valve admits pure air to take the place of the gases sucked out. By keeping the valve first mentioned open during the return of the piston the remaining operations are rendered similar to those of the Otto cycle.

Speed Indicator.

No. 722,532.—A. L. McMurtry, of New York.

A speed indicator comprising a stop-watch and a dial on which a pointer makes one-half of a revolution in a unit of distance, as a mile. An electrical contact starts and stops the watch, and resets it when the idle half of the pointer's revolution is nearly completed.

Piston Ring.

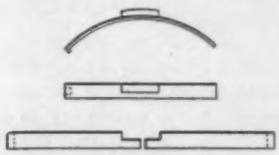
No. 722,440.—W. G. Wilson, Westminster, England.

A piston ring combined with an inner strip having a projecting tongue fitting into notches cut in the ends of the ring, which is preferably of the eccentric variety. The ring is kept from turning by a tongue or projection on this inner strip, fitting into a notch in the bottom of the groove for the ring.

Muffler with Valve.

No. 722,567.—M. Crawford, of London, England.

An exhaust muffler having two chambers separated by a valve backed by a



WILSON PISTON RING.

spring. The gases entering the first chamber push the valve open and are supposed to pass into the second chamber with such force as to create a slight vacuum in the first chamber, permitting the expulsion of the residual products of combustion when the inlet valve of the engine is opened.

Ignition System.

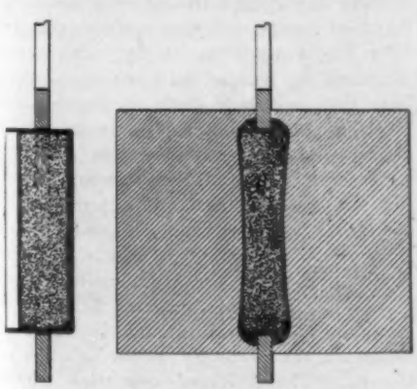
No. 722,005.—C. E. Duryea, of Peoria, Ill.

The Duryea primary ignition system, with stem of movable electrode passing through the exhaust valve stem, and a centrifugal governor to advance the spark automatically.

Edison Battery Electrode.

No. 723,449.—T. A. Edison, of Llewellyn Park, N. J.

This patent covers certain characteristics in the form given the active materials of the Edison nickel-iron battery, and the process of manufacturing the same. The active materials are enclosed in small perforated sheet steel boxes, as described in THE AUTOMOBILE of January 24 last, a number of these boxes being put into one grid. The boxes are put together in two halves, as shown in transverse section in the cut, and are then closed in by dies *A B*, which give them concave surfaces, and also squeeze their edges over the edges of the windows in the grid, to



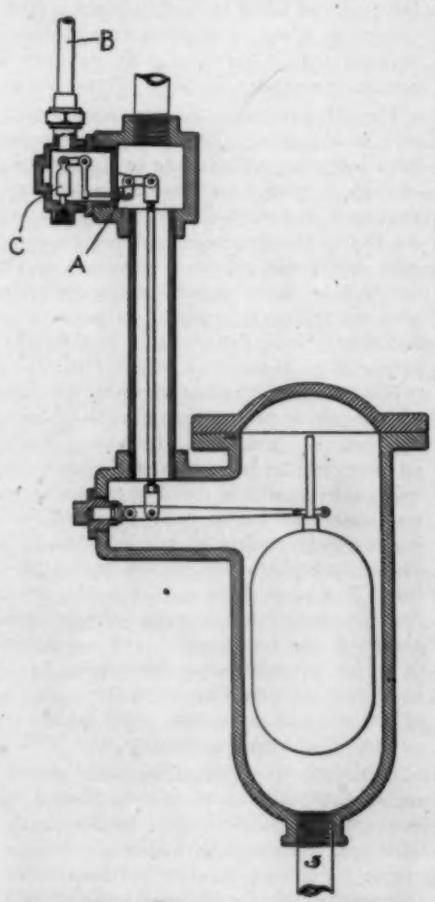
EDISON BATTERY ELECTRODE.

hold them firmly in place. The concaving of the sides is to allow the active material within to expand, as it does on charging. For greater stiffness, the sides of the boxes are transversely corrugated, though the cut given does not show this.

Feed Water Regulator.

No. 723,225.—J. M. Williams, Knoxville, Va.

This regulator comprises a float operating through suitable connections to admit steam through a valve *A*, when the water level rises, into a pipe *B*, through which it may act on a shut-off valve in the feed water pipe. When the water level falls, valve *A* closes, at the same time opening an exhaust valve *C*, through which the steam in pipe *B* may escape. In the form shown the device is not practically operative, since it will be practically impossible to make *A* close at exactly



WILLIAMS FEED WATER REGULATOR.

the moment when valve *C* opens. Consequently both valves are liable to be open or shut at the same time, which will evidently defeat the purpose of the invention.

Change Speed Gear.

No. 722,089.—A. De Dion and G. Bouton, of Puteaux, France.

A change gear for three or four forward speeds, with gears always in mesh and using the De Dion individual clutch system.

Edison Battery.

No. 721,682.—T. A. Edison, of Llewellyn Park, N. J.

A storage or "reversible" battery, in which the electrolyte is an alkaline solution, as of caustic potash, and the active materials are nickel hydroxide for the positive element and oxide of cobalt, mixed with copper or mercury or flake graphite for the negative electrode. When fully charged the nickel hydroxide is further oxidized and the oxide of cobalt is reduced to metallic cobalt, the mercury or graphite serving the purpose of a conductor merely. On discharging the nickel reverts to a lower state of oxidation and the cobalt is oxidized.

Sperry Battery Patents.

No. 723,326.—E. A. Sperry, of Cleveland, O.

An "armored element" comprising a pasted plate with a loose fabric of intocellulose ("pyroxylin") pressed into its surface and filled with active material, the purpose being to retain the active material against "blistering" and detaching from the grid owing to the formation of gas between the active material and the grid.

No. 723,327.—E. A. Sperry, of Cleveland O.

A pasted plate whose active material is applied in the form of finely-divided metallic lead, mixed with dry ammonium sulphate and moistened with ammonium hydroxide in water. The paste is applied to the grid and dried out under high pressure, and afterwards formed.

No. 723,328.—E. A. Sperry, of Cleveland, O.

A composition for pasted plates, comprising finely divided lead or oxide of lead, mixed with ammonium sulphate and a small percentage of a "catalytic agent," preferably alizarin, the object being to improve the cohesiveness of the lead. The paste is applied to this grid and dried under high pressure, and afterwards formed.

No. 723,329.—E. A. Sperry.

A pasted battery plate enveloped in a wrapping of pyroxylin, or cotton fabric treated with nitric acid. The process of preparing this fabric, to avoid the brittleness common in pyroxylin fabrics, forms the subject of the patent. The fabric is first boiled and dried, and then treated with a mixture of 113 1-2 parts of nitric acid of 1.42° gravity, non-fuming, to 150 parts sulphuric acid of 1.84° gravity; the temperature of the bath being not greater than 78° Fahr. The fabric is then washed, about 0.1 per cent. of nitro-benzol being added to the final washing to render it non-inflammable when dry.

The club book of the Automobile Club of America, just issued, shows the total membership to be 418, including 346 active and 72 associate members. Five hundred and forty-two automobiles are owned by the members, and 147 more have been ordered.

THE AUTOMOBILE

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SATURDAY, APRIL 11, 1903.

RASH DENUNCIATION OF CONTESTS.

Following the sad fatality at the La Turbie hill-climbing contest comes a not unexpected cry of opposition to automobile road races. This finds expression chiefly in the daily press, both home and foreign; superfluous in the case of the former and inconsistent in the case of the latter. Opposition of this sort represents hasty conclusions formed on improper premises.

In the hunting field, in steeplechasing, on the football gridiron and in many other arenas of friendly competition fatal accidents are not uncommon, in fact they are frequent. Yet no one, nowadays, seriously advocates the stoppage of these various forms of manly sport. Where the element of danger exists there is added to merely competitive sport an additional zest that appeals very strongly to the fully developed man. To risk not only being defeated by superior skill of an opponent, but to place one's own life in jeopardy in the doing, is one of the causes of the fascination which the profession of arms exercises over thousands of human beings, civilized and savage. In that case it is a life purpose, a profession, and not, as in the case of sport, a recreation. This, however, does not prevent proper precautions being taken in the conduct of sport. Just as the brave general takes advantage of the shelter of ground to protect his troops, knowing that live man is worth many dead ones, so the promoters of race meets would do well to see that all proper precautions are taken for the safety of the contestants. There is a point though at which the protection afforded by those who are not participants in a race ceases to be operative—where the personal equation comes in. In the La Turbie contest it is manifest that the course, while difficult, was not unsafe, as three competitors went ahead of Count Zborowski at very high speed and each safely negotiated the turn where he met death. In fact each of the competitors broke all previous records for the course. We believe the selection of such a course may be wisely left to those most immediately concerned, though as a matter of precaution the contestants should be allowed to go over a course at a moderate speed before racing.

The value of public opinion in such matters is doubtful. Familiarity and habit have too great an influence in the forming of such opinion. In horse racing the attendance of ambulances and surgeons at the course is common enough not to occasion comment; yet their presence at an automobile meet would unquestionably give material for conspicuous head lines and space filling denunciation in the daily press.

Road racing has done more for the improvement of the automobile than, perhaps any other agency. Indeed it is not an exaggeration to say that the commanding position which the French industry now enjoys is due more to the road racing experiences than to any inherent skill which the constructors of that nation possess. The same thing applies in the older field of marine engineering. Experience gained in the construction and operation of the abnormally fast torpedo boat, hastened the introduction of higher grades of material and immensely aided design in all classes of vessel construction.

Aside from its technical importance road racing has been the most valuable aid in awakening popular interest in the possibilities of the new vehicle. It would be a matter for sincere regret if the lamentable accident on the La Turbie course should cause any unwarranted and severe restrictions to be imposed on road racing abroad.

MORE DATA NEEDED.

Speculation as to the true cause of the accident to which Count Zborowski fell victim last week at Nice refuses to be arrested by the obvious observation that nothing would have happened if he had moderated his speed. A race without speed is nothing, and he who goes into it must logically aim for the highest speed at all points of the course. Three men had preceded Zborowski at the highest speed they could maintain and on vehicles of identical construction with that of the wrecked car. The nature of the turn was perfectly well known, and Zborowski's skill and experience were sufficient to tell him what he should attempt to do and what he should not attempt. Save for the possibility that his mental organism was not operating with its wonted precision—and this possibility is a factor which is perforce admitted as legitimate and indeed indispensable in all sports—we are impelled to investigate the purely mechanical aspects of the occurence in order to satisfy ourselves under what conditions of speed, angle of turn, coefficient of road friction, grade, design and weight distribution in the car, an accident would be likely to take place without fault or misjudgment on the driver's part.

Unfortunately, however, the material on hand in textbooks and in the annals of automobilism is quite insufficient for any but the most obtuse and theoretical considerations. This material needs to be supplemented with a mass of practical data, such as have been laboriously gathered, sifted and formulated in locomotive and marine engineering, but which are so far almost entirely lacking or scattered on many hands in the automobile world. It would be intensely interesting if those whose practical experience as builders and drivers has placed them in possession of such data—be they even fragmentary and insufficient—would contribute their knowledge and their inferences for the enlightenment of the public, whenever an event like the sad one of last week focuses the attention of the public upon questions of this character.

GERMANY AND THE AUTOMOBILE.

From the article by our Berlin correspondent in the present issue, dealing with Germany's automobile exhibition, most of our readers will not fail to receive a somewhat modified view of what Germany is doing, unless they have followed the evolution of automobilism in the fatherland very closely. Some statements are made to which Americans might take exception, in so far as the correspondent placidly ignores any American influence upon the trend of events, but they undoubtedly reflect the attitude taken by enlightened Germans in general and serve to show how little we have done to impress the world with the value of our work. The delivery wagons used in Berlin will perhaps create a favorable impression, showing the intensely practical application of the motor principle in which the Germans seem to spend their best efforts, and the large tractor for the colonies in Africa recalls to our mind the great field which lies open for American manufacturers in supplying the needs for motor vehicles in the many half-civilized countries where the white race is fighting its eternal battle for supremacy, and where the geographical and road conditions are so similar to our own that our industry should be the one best fitted for meeting the requirements.

Evidently, if Germany has lagged behind France as a home for automobile construction, it has been less for want of equal ability, but rather because her engineers refused to become enthusiastic for a pleasure problem and reserved their energies for utility work in which acceptable results are slower to be accomplished.

SECRECY REGARDING ELIMINATION TRIALS STILL MAINTAINED.

Plans for the eliminating trials of the American candidates for the Gordon Bennett Cup race team are still carefully guarded. Officers of the Automobile Club of America decline to say anything yet, and although the contestants were to report in New York April 11 for further instructions, the three Western candidates—Winton, Mooers and Matheson—had not arrived up to Wednesday at the New York garages where they and their racing machines were expected. Percy Owen and H. S. Harkness are in New York, of course. Winton's machine will come to the Winton garage, in East Fifty-eighth Street, and the Mooers and Matheson cars will come to Banker Bros., in Thirty-eighth Street, New York.

Harkness Cup Racer Tested.

The cup racer built in Brooklyn for H. S. Harkness, under his personal supervision, has been completed and was taken out last Sunday by Mr. Harkness for a trial run. Although a flaw in the rear axle developed, no delay will be caused, as an extra axle had been provided and has since been put in, affording several more days for testing before the elimination trials before the racing committee of the Automobile Club of America.

Lakewood Run Abandoned.

Owing to the rain, snow, hail and wind of last Saturday, the scheduled run to Lakewood of the Automobile Club of America was abandoned by individual choice, only one car showing up at the rendezvous at Lakewood. This was a Moyea tonneau driven by Henry C. Cryder, accompanied by L. L. Lorillard, Jr., and E. A. Sands. Nearly eleven hours were consumed in the ride of 72 miles.

May Withdraw Smith & Mabley Suit.

The suit of the Electric Vehicle Co. against Smith & Mabley, of New York, for alleged infringement of the Selden patent, did not come up for hearing on Monday in the United States Circuit Court, for which date the hearing was set, and it is asserted that the suit will probably be withdrawn, the plaintiff company and the defendant firm having come to an agreement, which leads to the belief that the latter has applied for admission to the Association of Licensed Automobile Manufacturers.

College Club Run and Inter-Scholastic Race Meet

The most extensive club run ever made in the United States is planned for April 13 to 19 over the 500-mile A. C. A. reliability contest course, from New York to Boston and return. Ambitious as the scheme is, it is all the more interesting and surprising to learn that it is to be undertaken by an organization of college preparatory students. The plans serve, however, to draw attention to the existence of a number of automobile clubs among university students, and to the possible prominent place they may take in the automobile movement.

The Boston run is to be made by members of the Cutler Automobile Club, an organization connected with the Cutler School on East Fiftieth Street, New York, accompanied by a few friends. Stops will be made at night in the same cities (New Haven, Conn., and Springfield, Mass.), as during that event. Boston will be reached Wednesday night, Thursday will be spent there and the return will begin Friday morning, the student automobilists expecting to reach New York again Sunday night, April 19.

The run will be made in about thirty-five machines, all but about half a dozen of which are owned by members of the club. Among them will be several big touring cars, including a 24 horse power Rochet-Schneider, driven by John B. Trevor; a 15 horse power Panhard, operated by Harvey S. Ladew, and four Wintons. One of the Wintons will be driven by Arthur H. Osborne, president of the club, and another by Bourgoyne Hamilton. The other machines will be gasoline and steam runabouts of several different makes.

The machines will be stored in New Haven on the first night's stop, in the sheds of the New Haven Wheel Works in York Street, which were used as the garage at this stop in the A. C. A. contest last fall. In Springfield the vehicles will be distributed in the station in Dwight Street and various hotel stables.

One of the features of the stay in Boston on Thursday will probably be some form of entertainment for the visitors by the Harvard Automobile Club, of Harvard University—possibly a dinner, at which discussion of a proposed interscholastic automobile meet may come up.

The Cutler Automobile Club is the only preparatory school automobile club in this country. It has already been in existence three years, making it older than the Columbia, Harvard and Yale university clubs. It now has thirty-six members, twenty-nine of whom possess motor vehicles. The Cutler Club has held runs to various places around New York City every Saturday afternoon this year, but the proposed Boston run is the most pretentious affair it has yet undertaken. It was originally intended to make a run to Washington, D. C., but the discovery that the roads are bad for long stretches of the route, and that ferry service across the Delaware River is slow and doubtful.

Plans for an intercollegiate and interscholastic automobile meet, the possibility of which has already been announced in these pages, will probably be matured at a meeting of representatives of the automobile clubs of Columbia, Harvard and Yale Universities, and the Cutler School of New York City, as well as of unorganized groups of motor enthusiasts in other schools, to be held in New York later this month. College and school automobilists have already begun to discuss the prospects for such a meet, and it is believed that a large and enthusiastic attendance could be assured. The Brighton Beach track is talked of as the best place for the races and the date will probably be set late in June.

Among the college automobilists who would appear in such a meet if it should be held, would be the Cannon brothers of Harvard, who are said to be building a new steam racer even more powerful than the one which acquitted itself so creditably at the Brighton Beach track last year.

Hearing in Fair Accident Case.

Testimony that Charles L. Fair died before his wife in the automobile accident in France last August was given by Lucien Mass, of Paris, in a hearing before ex-Justice Keener, as referee, in New York, on Tuesday. Mass, who was out on a bicycling tour with a friend, testified that while riding down a road he looked back and saw the Fairs' automobile coming toward them at a tremendous rate of speed. After the machine left the road and struck the tree, throwing the occupants out, Mass and his friend went to them and found, he declares, that Mr. Fair was absolutely lifeless, but Mrs. Fair was still breathing.

New York Trade Association.

The New York Automobile Trade Association is to be the name of the organization forming among the tradesmen of New York City, whose second meeting was set for Friday, April 10, at 1713 Broadway. The active membership will include makers and dealers in complete vehicles, while the associate membership will embrace the manufacturers of and dealers in parts and accessories. Active members will pay annual dues of $10, while the associate membership dues will be $5. "The mutual protection of the members and the public" is, according to one of the promoters, the principal object. Members of the executive committee will be elected annually by the members at large.

Fatal Accident on La Turbie Course.

Count Elliott Zborowski, An American Motorist, Instantly Killed and His Companion Dangerously Wounded by Collision of Car With a Rock Wall.

The La Turbie hill-climbing contest, held on Wednesday of last week in connection with the annual automobile festival week at Nice, France, was rudely interrupted by an accident in which Count Elliott Zborowski, an American, was killed instantly, and Baron de Pallange, his companion, seriously injured. The road to La Turbie winds in a tortuous course up the mountain side, with a low stone fence the only protection against the precipice on the right, and bounded on the left by a sheer rock wall. At a sharp turn in this road Count Zborowski, driving a 60 horse power Mercedes racing machine, model 1903, on its highest gear, and presumably as fast as it would go, lost control of his vehicle, which smashed itself against the rock wall and hurled its occupants out at the same time by the law of inertia. Zborowski, the cablegrams state, was thrown head first against a point on the wall two meters above the ground, and was picked up with his skull completely crushed and quite lifeless, while his companion, who was also first thought to have been killed, was carried insensible to a hospital at Nice.

The Countess Zborowski was at the time of the catastrophe awaiting her husband's arrival at the top of the hill.

The contest—in which Zborowski was a participant—was at once discontinued, and a similar contest set for the following day on the same road was prohibited by order of the Prefect.

At the turn where the accident took place a tablet commemorates the death in 1900 of a German automobilist, Wilhelm Bauer, who came to his end in the same spot and the same manner as Zborowski, though at much slower speed.

Immediately preceding the unfortunate American three other drivers of Mercedes racing cars had ascended the hill, namely, Werner, Degrais and Hieronymus, and had beaten last year's record over the same course by nearly 1 1-2 minutes, making the following times: 14m. 44 1-5s., 16m. 56 1-5s., and 14m. 26 4-5s., as against Gabriel's record of 15m. 45s., made with a Serpollet car in 1902.

Degrais will be remembered as the chauffeur who was unfortunate in the Paris-Berlin race in running over and killing a boy, and Hieronymus as the first automobile driver to ascend to the crater of Mt. Vesuvius.

Commenting on the causes of the accident, which are not fully understood, Mr. Charron, the well-known racing man and manufacturer, of Paris, advanced an explanation strongly in favor of throttle control by pedal pressure, such as has formed a feature of some American-built cars for a couple of years. His argument is telegraphed as follows:

"Excessive speed alone should not be taken as the cause, as there are at present seven or eight makes of automobiles, approximately, capable of reaching their highest speed without fear of accident.

"The automobile driven by Count Zborowski, as in the cases of several other makes, is fitted with a hand lever regulating the gas fixed to the steering wheel. If the driver wants to accelerate or diminish the speed of the motor, with his right hand he pushes forward or back this hand lever. This maneuver, which is very easily accomplished when the machine is running slowly, becomes dangerous on high speed, both hands of the driver being occupied with steering.

"It is out of the question to try to release one hand for the purpose of slowing down on a turn. In order to accomplish this Count Zborowski had only to shut off the gas before taking the turn, hold on to the steering and let the gas on again after the turn.

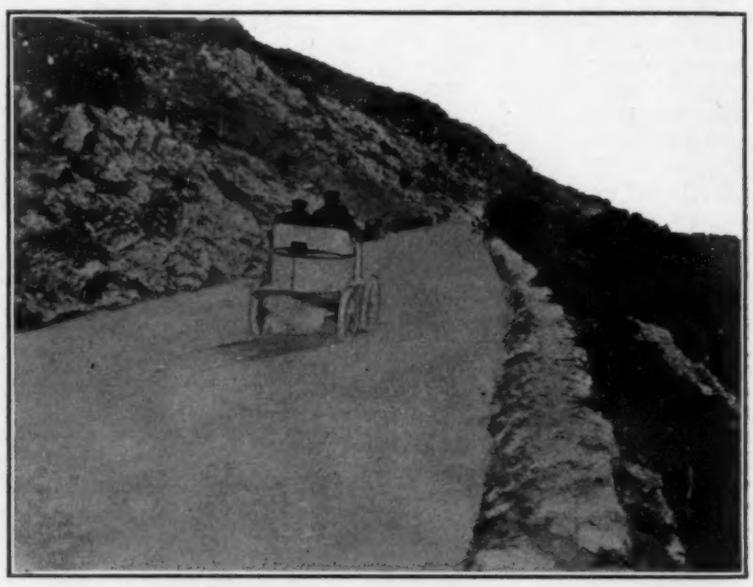
"Once having entered on the turn in the road it was too late to attempt this maneuver. If he had even taken one hand off the steering wheel he could not have hoped to safely make the turn, and, not being able to shut off the gas, the excessive speed carried him to his death in spite of his efforts to escape.

"Owners of automobiles may, however, reassure themselves that there is a means of avoiding this danger, even at the highest speed.

"It is necessary to add to the accelerating pedal an arrangement admitting of automatic control of the admission of gas.

"As soon as the motor is in motion, wishing to increase speed the driver presses gradually on the pedal. If he wishes suddenly to decrease speed he simply raises his foot from the pedal. This action is accomplished instantaneously and permits of keeping the hands on the steering wheel."

The survivor, Baron de Pallange, was interviewed at the hospital by a reporter for the *Petit Journal*, and stated that Count Zborowski was very nervous and impatient before the start and determined to risk everything to win first place. When the turn was nearly reached the Count saw the danger, however, but the time being past for throttling, applied the brakes hard. This, too, was too late. The car struck the wall with a fearful crash, and M. de Pallange remembered no more.



ROAD TO LA TURBIE ABOVE THE POINT WHERE COUNT ZBOROWSKI WAS KILLED.
From La France Automobile.

The débris of the car showed the lever set for the fourth speed, and Mr. Jellineck, of the Mercedes firm, judged from this that the car was going at a speed of 106 kilometers (65 5-6 miles) when the crash came. On level ground the same adjustment would produce 130 kilometers.

A photograph of the demolished car seems to indicate that the car did not strike the sheer wall first, but struck the rock on the right side of the road and then whirled around and into the wall.

Count Elliott Zborowski was a son of Martin Zborowski, a lawyer and real estate operator in New York, at whose death, in 1878, the victim of this accident inherited a large fortune, which was subsequently greatly increased by shrewd investments. The family is related to that of the Zabriskies, in New York and

Brooklyn, the latter name being an anglicized form of the old Polish patronymic. Elliott Zborowski was well known among amateur sportsmen in this country, but of late years lived almost exclusively in Europe, having assumed the title once held by his ancestors in Poland. He took part in the Paris-Vienna race last year and was noted as a daring and skilful, but somewhat reckless operator. He was to have driven either a Mercedes or a Napier car in the coming international Gordon Bennett contest in Ireland, and had already been over the selected course twice.

Expert Testimony in Pennell Inquest.

Special Correspondence.

BUFFALO, April 6.—Expert opinion regarding the operation of automobiles will form a chief part of the testimony to be given Friday at the inquest into the death of Arthur R. Pennell, who was so closely identified with the Burdick murder mystery, and who, with his wife, was dashed to death by his automobile jumping the curb on Kensington avenue and plunging into a stone quarry thirty feet below.

The testimony of automobile experts will be important in two respects—to determine whether or not Pennell committed suicide and whether or not several insurance companies shall pay his heirs about $40,000. Some of the insurance companies in which Pennell carried policies are not disposed to pay indemnity because of the manner in which Pennell came to his death, the policies of the companies which propose to contest payment having "no suicide" clauses.

International Hill-Climbing Test.

Special Correspondence.

BALTIMORE, April 6.—Much interest among local enthusiasts centered last Thursday in a match hill-climbing contest to prove the respective powers of a Stanley 5 horse power steamer, owned and driven by Howard W. Gill, and a 35 horse power Mercedes-Simplex recently imported by G. A. Dodge and driven by Mr. Dodge and his French operator. The advent of the foreign car had caused considerable discussion, and it was agreed to test the two vehicles in a race up Edmonton avenue hill, west of Gwynn Falls Bridge. This hill is seven-eighths of a mile long and steep, and has recently been repaired and smoothly surfaced. The conditions of the event provided that nothing was to be removed from the cars to lighten them, and that the start was to be made at moderate speed. Speculation ran rife among the parties who occupied the dozen automobiles that gathered for the occasion, and odds of two to one were wagered on the German.

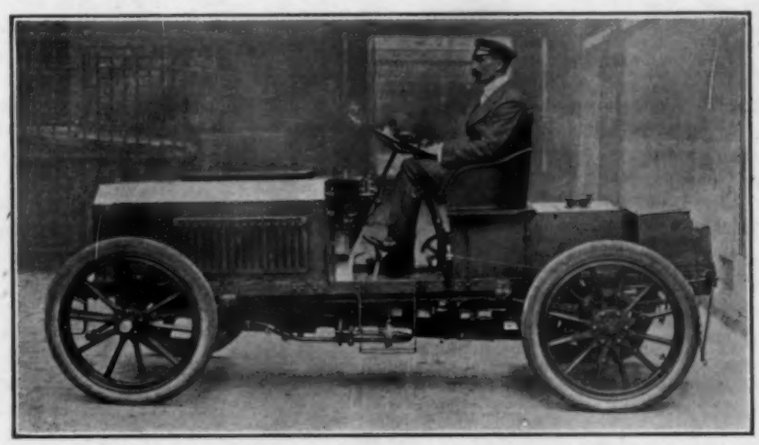
At the start Mr. Dodge took the lead with the Mercedes and Mr. Gill dropped in only a yard behind—as he afterward said to get the benefit of pace. Dust rose in clouds, and the gentle southeast breeze was slow to lift the veil for the spectators. A big head of steam had been worked up on the Stanley, and the machine held her power well, keeping close to the Mercedes for three-quarters of the distance up the hill. At the last quarter Mr. Gill pulled open the throttle wide and dashed ahead of the German, winning the race at the finish in 1:26 2-5 amid enthusiastic cheers.

Yale Captain's Costly Ride.

Special Correspondence.

NEW HAVEN, April 6.—The City Court has rendered judgment for $144.96 against Philip H. Kunzig, captain of last year's 'varsity crew, for burning out the boiler of a Locomobile which he hired from H. C. Holcombe, a local dealer, last year. The suit is the first of the kind in this State.

Kunzig hired the Locomobile at the Holcombe store last June for a trial spin, acting as his own driver. While he was hitting up the stroke to about 44 to the minute the auto caught a crab in such a way that the boiler was burned out. Suit was brought against Kunzig for the damage and judgment was taken by default, as the oarsman put in no defense.



GORDON BENNETT CUP DEFENDER.

S. F. Edge, Winner of the Cup in the 1902 Contest, Seated in the New Napier Racing Machine which weighs 1960 lbs. Suspension springs have no shackles fitted. Mr. Edge will start "No. 1" in the race next July. Photographed for the Autocar, Coventry.

Recrudescence of An Old Idea.

The *New York Herald* describes a variable speed transmission device which has just been produced in Levellois-Perret, France, by a Mr. Meischke-Smith, who thinks that it is going to revolutionize automobile transmission systems.

In brief the apparatus consists of a variable throw crank, driven by bevel gearing from the engine, and having the crankpin connected by a rod to a friction ratchet clutch, like the free wheel clutch of a bicycle, which receives motion from the variable throw crank during the forward half of the latter's revolution. From the clutch shaft the power is transmitted by chain or otherwise to the rear wheels.

The crankpin projects from a movable slide in the crank, and is shifted toward or from the center by a screw passing through the slide, which latter acts as a nut on the screw. The inner end of the screw carries a bevel pinion meshing with another pinion on a stud projecting from a counterweight on the crank. The latter pinion has a spur pinion formed integral with it, and a spur gear and an internal gear attached to separate loose discs, mesh with the spur pinion. Normally the discs turn with the shaft, but by retarding one or the other by means of a brake the spur and bevel pinions are made to turn, rotating the screw and shifting the crankpin in or out according to which gear is retarded.

Although it seems new to its inventor, the apparatus is really only a very crude edition of a system which has been before the public in this country, in heavy vehicles, for a couple of years. The obvious objection to it is that the forward component of the crankpin's velocity is constantly varying throughout the stroke, imparting to the ratchet a jerky motion and rapidly wearing it out. By using three rods and ratchets working from the same crankpin, but in different directions, and by giving the ratchets very ample wearing surface, this difficulty appears to have been fairly well taken care of in the American form of the device, but it is not easy to be sanguine about the future of the Meischke-Smith construction in its present form.

Connecticut Automobile Bills Signed.

Special Correspondence.

NEW HAVEN, April 6.—Connecticut's two principal automobile bills have passed the House of Representatives in such shape that they will not interfere with lovers of legitimate sport. It was in the House that the opposition to the motor vehicle was encountered.

BRIDGEPORT AUTO CLUB'S BANQUET AND ELECTION.

Special Correspondence.

BRIDGEPORT, April 6.—The first annual banquet of the Automobile Club of Bridgeport, held to-night, was a great success. Covers for forty-five were laid at the Atlantic Hotel, and an elaborate menu, shown herewith, was enjoyed.

President Charles C. Godfrey presided and the guest of the evening, Secretary S. M. Butler, of the Automobile Club of America and the American Automobile Association, sat at his right and Secretary F. W. Bolande, of the local organization, on his left. After cigars had been lighted President Godfrey introduced Mr. Butler in a few well chosen words, recounting how the club had been organized in 1900 by seven enthusiastic automobilists at Louis Cassier's suburban home at Trumbull and how in three seasons it had grown to sixty-five active members all owning motor cars. He referred to the

MENU
Starting Crank Caviar Sur Canape.
Hot Spark Oyster Cocktail. Sliding Geared Olives.
Early Ignition Bouillon En Tasse.
Low Water Alarm Celery. Friction Clutch Boiled Salmon Hollandaise.
Pop Valve Cucumbers.
Twenty-Four Horse Power Pommes Duchesse.
Dave Read Chicken Pattion a la Miller. Wheel Steering Tomatoes.
Automobile Lamb Chops a la Godfrey.
Blow-off Flageolets.
Roast Turkey with Detachable Tires. Cranberry Sauce with Electric Juice.
Auxiliary Throttled Sweet Glace.
Run Punch Lubrication.
Slow Speed Philadelphia Squab and Crouton.
No Vibration Currant Jelly Legislative Lobster Salad.
Pulley Cheese Straws
Air Cooled Macedoine Jelly.
Late Delivery Nesselrode Pudding. Potito Fours. Bolts and Nuts.
Direct Drive Raisins (Easy) Fruit. (All Automobilists.)
Bailoons with Water Jackets
Edam Spark Plug. Coffee in Cylinders.
BRIDGEPORT CLUB BANQUET MENU.

popularity of automobiling in Bridgeport and commended the individual members of the club for the pains taken to observe the State law. He said that there were many converts to automobiling who were ready to get machines just as soon as they could decide what they wanted. He predicted that Bridgeport would continue to be the greatest automobile city of its size for some time to come.

Mr. Butler spoke glowingly of the prospects of the American Automobile Association and urged the Bridgeport motorists to become affiliated with it. His remarks were very entertaining and he was given three cheers and a vote of thanks. Spirited remarks were made by A. L. Riker, of the Locomobile Co., Frank Miller and others.

A business meeting was held before the banquet at the cosily furnished club room on State Street, and the following officers for the coming year were elected: President, J. B. Cornwall; vice-president, W. S. Teel, Jr.; Secretary, Thomas Fish; treasurer, F. T. Staples; governors, Frank Miller, Bernard Setzer, D. F. Read and F. I. Hitchcock.

It was decided to hold a "hare and hounds" on the morning of Memorial Day. This is a new diversion for motorists. Several fast cars will be sent out ahead and they will either scatter paper or affix pointers at corners leading the rest of the crowd a merry chase. A prize will be offered by the club. The chairman was empowered to appoint a committee to make the necessary arrangements. During the past season the club has successfully given a parade, an endurance run, a hill-climbing contest and several smokers.

The following new members were elected: George A. Comstock, John R Woodhull, W. W. Naramore, F. A. Strong and W. C. Bryan.

Pittsburg Club Growing Rapidly.

Special Correspondence.

PITTSBURG, April 6.—Although the charter for the newly organized Automobile Club, of Pittsburg, is scarcely two weeks old, membership of the club now approximates 100, and is growing as fast as the applications can be acted upon. Most of the prominent automobilists of the city have joined the club, or are about to do so. Permanent quarters will soon be secured in the East End convenient to the boulevards.

The officers of the club are: President, George H. Flinn; vice-president and solicitor, James Francis Burke; secretary, Linford Smith; treasurer, Reuben Miller.

The club proposes to take up the work of securing legislation in behalf of good roads and for the equitable regulation of the use of automobiles. A committee has been appointed to attack the automobile bill now before the Pennsylvania Legislature, which the members of the club are unanimous in declaring to be both unjust and ridiculous.

Pittsburg now has more than 1,000 automobiles—a larger number in proportion to its size than can be claimed by any other city in the country, it is confidently believed. Fifty new vehicles have made their appearance during the past week and several hundred more are ordered. The demand here is for machines with good hill-climbing and heavy track abilities.

Country House for Washington Club.

Special Correspondence.

WASHINGTON, D. C., April 2.—The National Capital Automobile Club is to be reorganized and a new constitution adopted as the present constitution does not give the club the right to hold real estate in its own name and has other defects requiring to be remedied.

The club has rooms in a downtown office building, but they do not seem to attract the members, and it has been noticed that for some time the members have not shown as much interest in the club as they might. A country club was suggested and the idea met with immediate approval. Several available places have been inspected, and in the event that a suitable building, with large surrounding grounds, could not be secured, the officers were given authority to have plans drawn for a building. So it is probable that the club will have a country home before next fall.

Club to Discipline Scorners.

Special Correspondence.

MINNEAPOLIS, April 4.—Th. Minneapolis Automobile Club put itself on record last Thursday night as opposed to fast or reckless driving. The matter was thoroughly discussed at a dinner at the Commercial Club. It was decided that offenses of this kind should be reported to the secretary of the club. On a second complaint the matter shall be brought before the board of governors, and on a third complaint the member shall be expelled. The club is determined to put a stop to reckless driving.

Club caps, which will be either of leather or waterproof silk. and have affixed the monogram of the club, were adopted. It is also the intention to designate club members' automobiles either by the club monogram or some other appropriate design.

As soon as the roads are in condition the club will commence its country runs.

The Minneapolis Club, which was organized last October, now has a membership of eighty. Twenty-five new members were admitted at the last meeting. The officers of the club are: E. J. Phelps, president; Seall D. Andrews, secretary, and L. B. Newell, treasurer.

Vermont Club Organized.

The Automobile Club of Vermont was organized at Montpelier on the evening of March 26. The officers are: President, Dr. L. Hazen, of Burlington; first vice-president, W. B. Fondar, of St. Albans; second vice-president, C. C. Warren, of Waterbury; secretary and treasurer, W. D. Woolson, of Springfield. The object of the club is to further the interests of automobiling in the State, and to bring its members together socially. A recent census shows that about seventy-five automobiles are owned in Vermont at present, and a number of persons have ordered machines for delivery this spring.

The Berkshire Automobile Club of Pittsfield, Mass., is planning an active season and will hold several runs to cities with a 100-mile radius when weather and roads become more settled. The club has a territory in which is situated some of the finest scenery in the State, and although there are many stiff climbs in the Berkshires, the roads are fairly good. The club now has about thirty-five members, with applications which will bring this number up to fifty.

WISCONSIN TRADE ASSOCIATION IS FORMED IN MILWAUKEE.

Special Correspondence.

MILWAUKEE, April 4.—The Wisconsin Association of Automobile Manufacturers and Dealers was organized last night at the St. Charles Hotel. Officers were elected as follows: President, E. W. Olds, Milwaukee; secretary-treasurer, W. J. Merkel, Milwaukee.

The formation of this organization is the most important step taken by manufacturers and dealers in Wisconsin, a step warranted if not made necessary by the growth of the trade in the State. The following concerns and agencies, all located in Milwaukee, were admitted to membership: Weber Automobile Co., National Automobile Co., Jonas Automobile Co., Oldsmobile Company, Northwestern Furniture Co., B. & P. Manufacturing Co., C. C. Norton, Merkel Manufacturing Co., Bates-Odenbrett Aut. Co Federal Manufacturing Co., Kuntz Automobile Co.

Other Milwaukee concerns making automobile and motor cycle parts as well as companies from various parts of Wisconsin, will join the association in the very near future. The Wisconsin Wheel Works, at Racine, and the Thomas B. Jeffery & Co., of Kenosha, will become members. There are about 250 companies in the State interested in the motor vehicle trade, in addition to many agents, and it is hoped that all will become members.

SHOW COMMITTEE APPOINTED.

At the meeting of the association last night plans for the automobile show to be held here next month were discussed, and a committee consisting of Fred Patee and R. C. Forrer was appointed to act for the organization and do everything possible to make the affair a success.

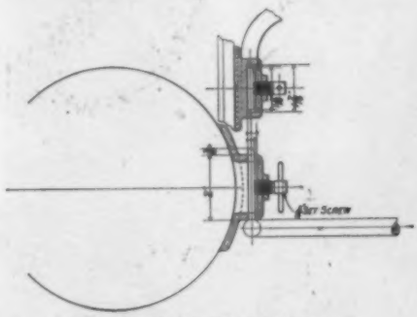
Fred. Patee, formerly of Indianapolis, and among the first to go into the manufacture of motor bicycles, said: "There is no reason why an automobile show in Milwaukee should not be a success. There seems, from present indications, no chance for failure in this venture. The National Guard Armory, where the exhibition will be held, has a floor space of 5,000 square feet, and only room for about four more spaces has not been allotted," said Mr. Patee. "The exhibits will include many well known makes of vehicles, but, as might be expected, the Milwaukee machines will outnumber those from other cities. If Milwaukeeans take well to an automobile show it is not improbable that a second exhibition will be held next year at the Exposition Building, which is almost twice as large as the Armory."

The following are among the automobile concerns which have already secured space or will be represented:

Weber Automobile Co., National Automobile and Motor Co., Jonas Automobile Co., Olds Motor Works, Bates-Odenbrett Automobile Co., Kuntz Automobile Co., Speedwell Automobile Co., Packard Motor Car Co., American Darracq Automobile Co., Haynes-Apperson Automobile Co., Knox Automobile Co., F. B. Stearns Co., International Motor Car Co., Northwestern Furniture Co. (maker of the Haase automobile), Federal Mfg. Co., and the Carbureter Co. The motor bicycles to be exhibited include the Merkel, Mitchell, Thomas and one other.

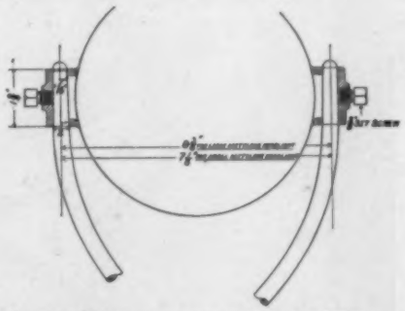
LAMP BRACKET STANDARDS ADOPTED BY THE N. A. A. M.

The committee appointed by the National Association of Automobile Manufacturers to investigate the question of standardizing lamp brackets made its report to the Executive Committee at a recent meeting. The committee explained that it had



OIL SIDE LAMP BRACKET.

communicated with the various automobile manufacturers asking them for an expression of opinion as to the best form of bracket for oil side lamps and for acetylene head lights. The replies to these in-



ACETYLENE HEAD LIGHT BRACKET.

quiries, and a full consideration of the matter, resulted in the following recommendations by the committee:

(1) For oil side lamps, the form of bracket shown by sketch enclosed. This bracket may be made any shape that the lamp manufacturer may elect, provided the portion of bracket which fits the lamp prop is made in accordance with the dimensions shown on attached sketch.

(2) For the large or small acetylene head lights, the style lamp bracket shown by accompanying sketch, and we advise the standardization, as nearly as possible, of the distance between the centers of these lamp brackets, as shown.

These recommendations were adopted and it was ordered that the information be sent to active members and lamp manufacturers, together with blue print of the standard lamp brackets.

Gasoline Cars in Indianapolis.

Staff Correspondence.

INDIANAPOLIS, March 14.—At last Indianapolis has been added to the list of middle-western cities producing gasoline vehicles. She has long been foremost in the manufacture and sale of electric automobiles of all styles from runabouts to delivery wagons, and has been the home of a concern that has spent years and thousands of dollars in experimental work on gigantic steam trucks, but up to the present season no local builders have placed hydro-carbon cars in the market. Now, however, the city is coming forward rapidly in this branch of the industry. There are at least two companies here that will be in the market with gasoline vehicles for 1903, and one that builds all the parts for assembling into complete vehicles. The work that the new Premier Motor Mfg. Co. is doing in the manufacture of tonneaus was told in the last Indianapolis letter. Another local concern that is this season making its advent in the field is the Mohawk Cycle Co., of North Indianapolis, makers of the Rumsey bicycles. It is a long-established company of which L. M. and M. Rumsey are president and vice-president, and H. L. Hewitt is secretary and general manager.

A visit to the factory revealed work well advanced on a first lot of ten cars of the runabout type, and a first lot of ten tonneau cars. In addition to these two models, the company is now at work on two huge 70 horse power racing cars, which it is building to the orders of Carl Fisher, automobile dealer of Indianapolis, and Earl Kiser, ex-bicycle racing champion, of Dayton, O. All of the three styles are of the horizontal motor type, the runabout having a single-cylinder engine and the tonneau a double-cylinder opposed motor, both located at the back, while the racing cars have two pairs of opposed cylinders, each 7 by 7 inch bore and stroke, located under a long hood in front.

Big Line in the Northwest.

Special Correspondence.

MINNEAPOLIS, April 6.—Eleven automobile manufacturers are represented by the Pence Automobile Co., which has opened one of the largest establishments in the Northwest, at 315-319 Third Street, South. The machines which will be handled in this comparatively new territory are the Cadillac, Autocar, Stevens-Duryea, Franklin, Toledo gasoline, Baker electric, U. S. Long Distance, Vehicle Equipment Co.'s electric trucks and the Peugeot, Georges Richard and Mors French cars. H. E. Pence, president of the company, is a prominent resident of Minneapolis and a member of the Chamber of Commerce.

NEW VEHICLES

Mohawk Runabout and Tonneau.

The Mohawk runabout is a two-passenger vehicle weighing 900 pounds and rated at 7 horse power. The speed of the single cylinder motor is variable from 100 to 1,500 revolutions per minute, giving the car a speed range, through the variable speed transmission, of from four to a maximum of thirty miles on good roads. The car shown in the photograph was used all last season for the purpose of trying it out, and it is the model after which this year's machines are being built. The transmission, which is a duplicate in miniature of that used in both the tonneau and the racing machine, is of the back gear friction type, with large spur gears, giving two forward speeds with direct driving connection on the high speed. This gearing is incased in aluminum on the right hand end of the crankshaft, and runs in oil. The clutch is at the hub of the flywheel, a disc splined on the gear-carrying sleeve being movable into contact with the face of the flywheel. The sprocket is carried on the end of the gear sleeve at the middle of the crankshaft, and is connected by center chain to the differential. Control is by double lever.

Features of the runabout that distinguish it from others are the cutter form of dash and the plain tube radiator built into and conforming with the dash, with 3-4-inch tubes extending transversely across in a single series. The lowest of these tubes is above the level of the water tank, so that it drains into the latter and will not freeze and burst.

The frame is of the long side leaf spring pattern and steering is by tiller. The finish is deep maroon striped in black and gold and upholstered in black.

A tonneau body with detachable rear seats is fitted to the two-cylinder car, which has a seating capacity of five passengers and is rated at 18 horse power. The opposed motor has a speed variation from 100 to 1,000 revolutions per minute, giving a speed range of from six miles to a maximum of forty-five on good roads. The two halves of the motor are practically independent except for the double piston connection to the single crankshaft. Each cylinder has its own float feed carbureter, with throttle control, and is supplied with an individual positive water circulator. Each carbureter has two air intake pipes on opposite sides of the mixing chamber, each pipe having its end closed by a short section of rubber and fabric hose perforated with innumerable holes for the purpose of muffling the inspiration. The only purpose of fitting two such inlets is to provide ample air. The spark plugs are inserted immediately above the intake valves in small valve chambers bolted onto the combustion chambers cast integral with the cylinders. Thus they are away from the foul gases as they rush out of the exhaust valves and are swept clean by the incoming fresh charges.

MOHAWK TWO-PASSENGER 7-HORSEPOWER RUNABOUT.

MOHAWK RUNABOUT AND TONNEAU.

The gasoline and water tanks are carried under the tapering hood in front, both being of pyramidal form and filled through tubes passing through the top of the hood. The muffler is cylindrical and is placed longitudinally under the forward center of the car. The battery and tools are carried in a box back of the transmission gearing over the rear axle.

The frame is of angle steel supported on

MOHAWK 18-HORSEPOWER CONVERTIBLE CAR WITH OPPOSED MOTOR.

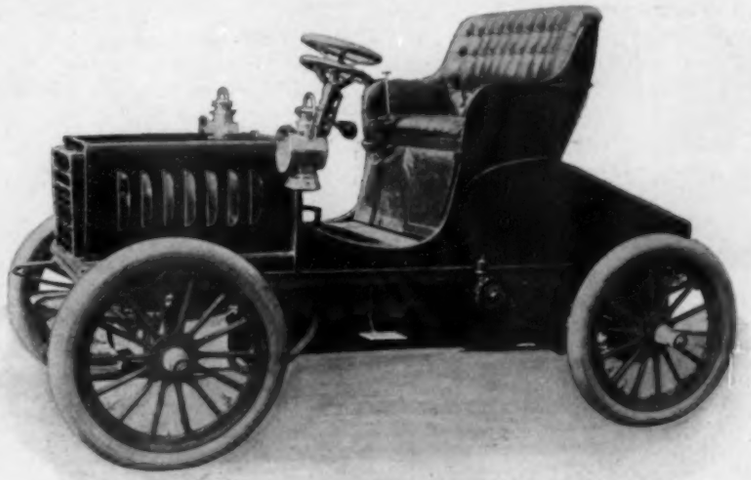
semi-elliptic springs. Emergency band brakes are fitted to the drive wheels. The car is equipped with wheel steering and the wheels are of the artillery wood type, 32 inches in diameter. The weight of the car complete is 1,900 pounds.

A feature of this car is the freedom of the body from mechanical attachments. The body can be detached by the removal of six bolts, and the chassis can be operated without the body almost as well as with it, except for the inconvenience to the driver. The finish is in the same colors as the runabout.

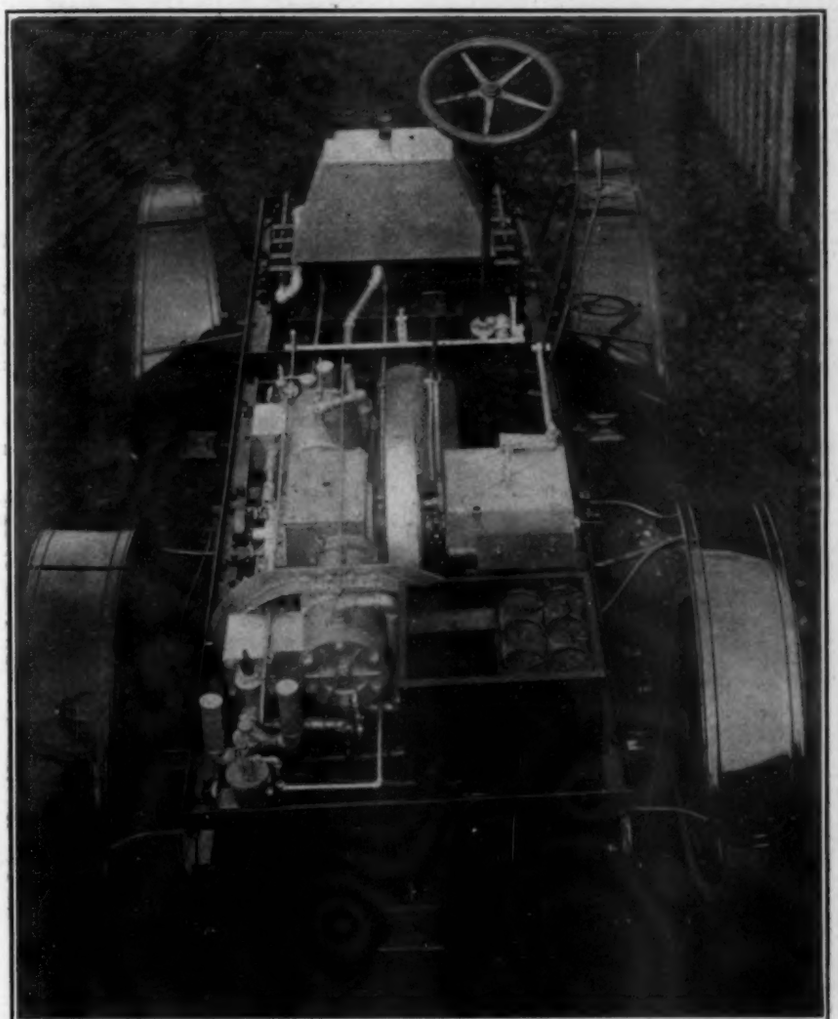
Work on both the runabouts and tonneau cars is progressing so well that both types will be ready for delivery in April. The vehicles are manufactured by the Mohawk Cycle Co., of North Indianapolis, Ind.

Grout "Frenchie" Runabout.

A steam car designed to meet the wants of automobilists who favor steam as a power, but like the "automobile" appearance of the gasoline touring cars, is the new "Frenchie" steam runabout shown in the accompanying engraving. This machine has the hood in front and the general sturdy effect of the gasoline car, with the advantage of quiet operation, speed and flexible power afforded by steam, and is comfortably upholstered.



GROUT HOODED STEAM RUNABOUT WITH HORIZONTAL ENGINE.



CHASSIS OF MOHAWK 18-H. P. CAR SHOWING POWER PLANT ARRANGEMENT.

This runabout is designed and built by Grout Brothers, of Orange, Mass., for general touring. It is powerful, making it a good hill climber, is low, has a long wheel base, and an angle iron frame. The boiler, equipped with this firm's patented down draught, is located in front. The engine is horizontal and is encased. It drives direct to the countershaft, which transmits to the rear wheels by means of side chains.

The equipment of the car includes a condenser, wheel steering and a wheel throttle which works by the up and down movement and rotates with the steering wheel or independently as may be desired. Provision is made for a fuel supply sufficient to carry the car 150 miles on one charge. Deliveries are now being made. The same model is furnished with tonneau seats attached.

Crompton Steam Victoria.

Several radical novelties in construction have been adopted in the new steam carriage built by the Crompton Motor Works, of Worcester, Mass., the victoria model of which is shown in the accompanying illustration. There are twenty-four separate fire-tube boilers, twelve on each side at the rear of the body. All are fed from a common water supply and deliver steam into a common pipe. They are made of steel shells three inches in diameter and each has seventeen copper flues. A burner plate with twelve ring burners is situated under each line of boilers, each plate being supplied from a single generator and having passages by which one burner may be relighted from another adjoining. The gasoline supply is controlled by an automatic diaphragm.

A four-cylinder, single-acting engine is placed horizontally between the two rows of boilers. Its valves are operated by a secondary bevel gear shaft. The crankshaft is over the rear axle and the power is transmitted by bevel gears to a vertical shaft, having a telescoping joint affording compensating motion between the axle and engine. A bevel gear at the lower extrem-

ity of this shaft meshes with the gear on the differential. The engine cylinders are placed one above the other and may be removed by unscrewing the plate which supports the engine.

The water level is automatically maintained, no gauge glass being provided. The

CROMPTON STEAM VICTORIA, WITH TWENTY-FOUR BOILERS.

water pump is of the direct acting steam type, and there is also a hand pump. The water tank, of 47-gallons' capacity, is located under the seat, and two 5-gallon gasoline tanks are carried on the dash.

Structural steel is used in the running gear, with full elliptic springs at both front and rear. The rear wheels are 36-inch and the front ones 34-inch. The wheel base is 74 inches. An inclined wheel and worm gear are used for steering. The rear axle is of tubular construction, with a reinforcing arch, and is fitted with roller bearings. Ball bearings are used on the front axle.

This car was first exhibited in March at the Boston show, where it attracted much attention.

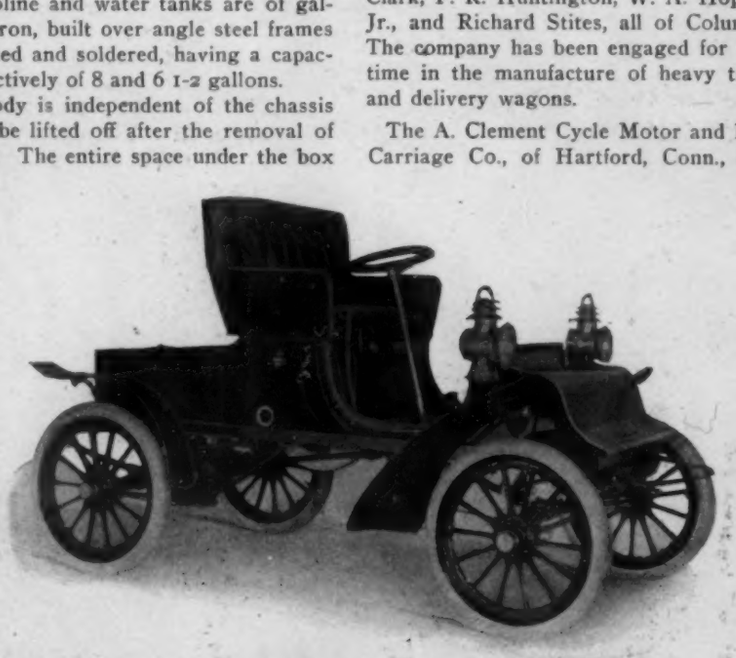
The Flint Roadster.

One of the new automobiles of the year, publicly exhibited for the first time at the Detroit show during the second week in February, is the Flint Roadster, herewith illustrated. This is a car of the single-cylinder motor type, designed to carry two persons over the average American roads. It has a wheel-base of exactly six feet, making it comfortable in use and allowing ample room between the seat and dash. It is built on the popular reach-less style, with bent angle steel frame, supported on four three-quarter elliptic springs 38 inches long, and is equipped with ball bearing artillery wood wheels fitted with 3-inch tires. It has ample power for heavy going in mud or on hills, the engine being of four-cycle type with a cylinder of 5 1-4-inch bore by 6-inch stroke, giving its best efficiency at 750 revolutions per minute. The motor is simply and compactly built and the water jacket has extra large capacity. Spiral gearing is used to eliminate noise. A speed range from six to thirty miles is afforded, control being by one lever.

The Champion planetary transmission and the Brown-Lipe equalizing gears are used. The carbureter and muffler are made by the manufacturers of the vehicle, the Flint Automobile Co., of Flint, Mich., but the Altman radiator and Baldwin chain are employed. The steering is by side lever, all parts of the mechanism being in plain sight, and a 2 by 10-inch band brake on the differential is set by pedal.

The body is unusually roomy, being 96 inches long by 35 inches wide, and fitted with a comfortable seat of extra width, cushioned and upholstered in leather. The gasoline and water tanks are of galvanized iron, built over angle steel frames and riveted and soldered, having a capacity respectively of 8 and 6 1-2 gallons.

The body is independent of the chassis and can be lifted off after the removal of six bolts. The entire space under the box front is reserved for a locker for the storage of clothing and other articles when touring, or the medicine case of the physician or sample case of the commercial traveler. The motor and other mechanical parts are readily accessible by dropping the rear gate, lifting the cover which extends from the back of the seat to the rear end of the body, raising the seat bottom and removing the panels in the front of the seat. The extra wheel-base not only eliminates the tendency to fore and aft pitching, but enables the vehicle to hold the road steadily.



FLINT ROADSTER GASOLINE CAR, SINGLE-CYLINDER MOTOR.

Industrial Notes.

The Boston & Amesbury Manufacturing Co., recently organized to manufacture automobiles and motor launches, has bought the power house of the Amesbury Electric Light, Heat and Power Co., in Amesbury, Mass., and will immediately transform the building into a factory for its purpose. The officers of the new company are: President, H. A. Spiller, of Boston; treasurer, John Miller, Jr., of Amesbury; secretary, Robert G. Patten, of Amesbury.

The Kidder Motor Vehicle Co., of New Haven, Conn., has voted to discontinue its corporate existence. It was organized about three years ago with the late T. Attwater Barnes as president, and Charles Colby, of Chicago, vice-president. It manufactured a few steam vehicles designed by a Mr. Kidder, of Boston, who is now pursuing experiments with gasoline and electric vehicles.

The Motor Truck Co., of Columbus, Ohio, has been incorporated under the laws of West Virginia, with a capital stock of $100,000, by M. S. Hopkins, J. M. Clark, F. R. Huntington, W. A. Hopkins, Jr., and Richard Stites, all of Columbus. The company has been engaged for some time in the manufacture of heavy trucks and delivery wagons.

The A. Clement Cycle Motor and Light Carriage Co., of Hartford, Conn., is to enlarge its plant there this fall to an extent which will require 600 employees. The company has heretofore made motors, but when its new plant is in operation will manufacture complete automobiles.